

# THE ECHINODERM NEWSLETTER

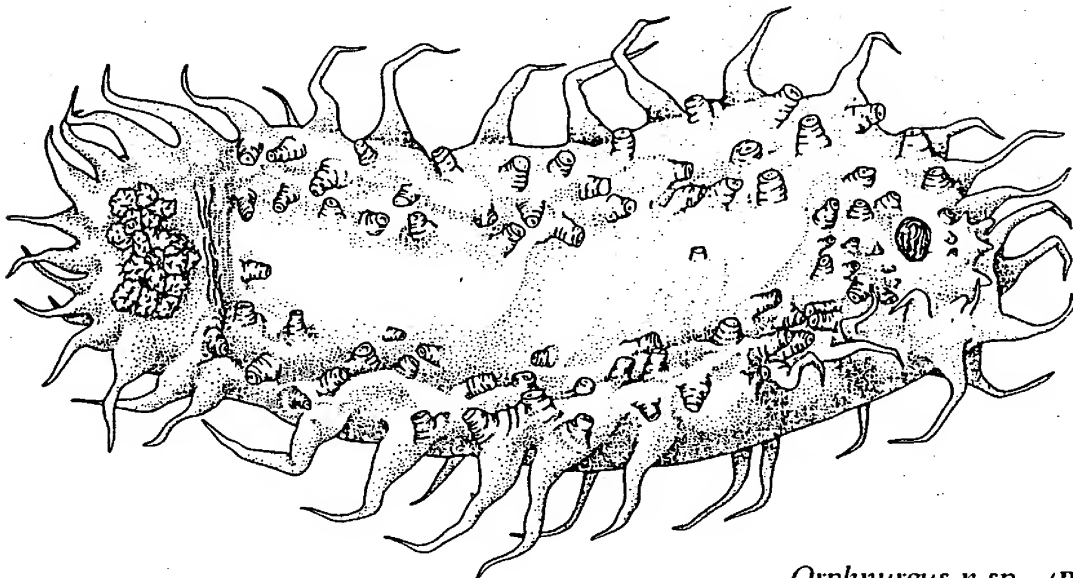
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The newsletter contains information concerning meetings and conferences, publications of interest to echinoderm biologists, titles of theses on echinoderms, and research interests, and addresses of echinoderm biologists. Individuals who desire to receive the newsletter should send their name, address and research interests to the editor.

The newsletter is not intended to be a part of the scientific literature and should not be cited, abstracted, or reprinted as a published document.



*Orphnurgus n.sp.* (P. Condit del.)

## TABLE OF CONTENTS

Echinoderm Specialists	
Addresses.....	1
Telephone - FAX - e-mail numbers.....	25
Current Research.....	32
Requests and Information.....	44
Recent Publications on Echinoderms.....	48
Fossil Crinoid Collections at the	
National Museum of Natural History, Smithsonian.....	67
Papers Presented at Meetings	
8th International Echinoderm Conference.....	68
XII Congreso Nacional de Zoologia.....	70
American Society of Zoologists.....	71
Zoological Society of Japan.....	72
Geological Society of America.....	76
Papers Presented at Meetings (by region)	
Canada.....	79
Europe.....	80
Mexico.....	81
South America.....	81
India.....	81
New Zealand.....	82
New Caledonia.....	82
Japan.....	82
South Africa.....	82
United States.....	83
Theses and Dissertations.....	84
How I began to study echinoderms (part 4)	
A.L. Feldman, C.G. Messing, D. Zavodnik.....	90
Books and Announcements.....	92
Echinoderms of the Rovinj area.....	117
Obituary: Howard Barraclough Fell.....	119

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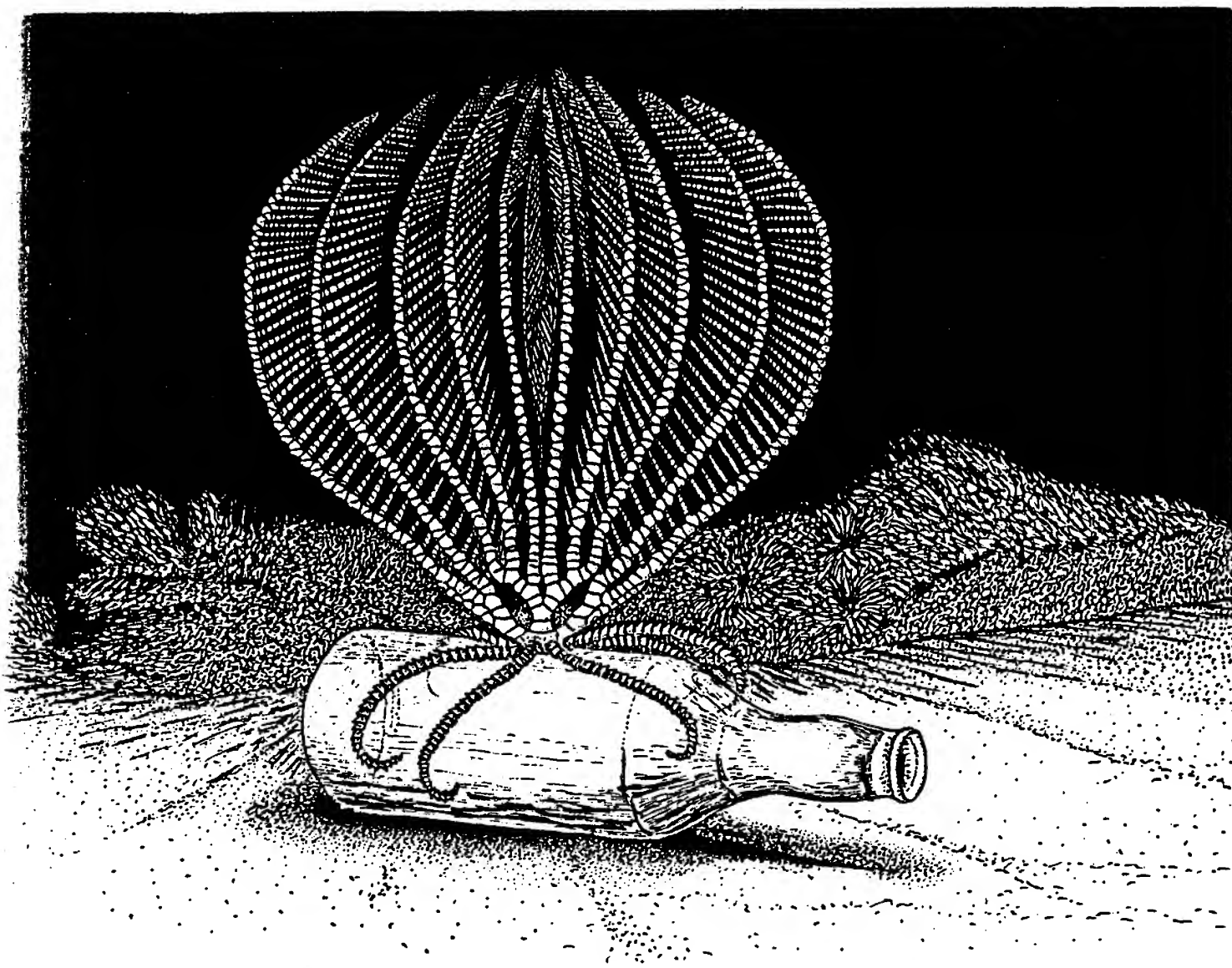
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Happy New Year! *Václav Petr*

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## CURRENT RESEARCH

ANDACHT, TRACY M.

studying the mechanism of dorsoventral polarity disruption by nickel chloride in sea urchin embryos

AUSICH, WILLIAM L.

Paleozoic crinoids

BALSER, ELIZABETH J.

studying the development of the gonad in holothuroid echinoderms (postdoctoral fellowship at Smithsonian Marine Station at Link Port, Ft. Pierce, Fla. - beginning Feb. 1994)

BARTSCH, ILSE

ophiuroid associates, endo- and ectoparasites

BAUMILLER, TOMASZ K.

ecology and functional morphology of recent isocrinids; taphonomy of arms and stalks of articulates and advanced cladids vs. other Paleozoic taxa; diversity of Permian and Triassic crinoids and effects of the P/T extinction; patterns of turnover and extinction of Paleozoic crinoids; ecology of Seirocrinus; borings in Paleozoic pelmatozoans

BEGBIE, KIRSTEN M.

studies on the hyponeural nervous system of the brittlestar, Ophiura ophiura

BENTLEY, ANDREW

biology of the sand dollar, Echinodiscus bisperforatus

BERENTS, PENELOPE B.

collection manager of marine invertebrates at the Australian Museum

BIRENHEIDE, RUDIGER

morphology, physiology and biomechanics of crinoids

BLAKE, DANIEL B.

Texas Cretaceous asteroids; Upper Paleozoic asteroids

BOCKELIE, JOHAN F.

Heliocrinitids (cystoids) from Scandanavia and the Bathic; taxonomy, functional morphology and palaeoecology



BORZONE, CARLOS A.

bioecological study of Mellita quinquiesperforata and Encope emarginata in beaches of Parana's state; relation between morphodynamics and benthic macrofaunal distribution in sandy beaches of Parana's state; program management for the oceanic islands of Parana's state

BOUDOURESQUE, CHARLES F.

feeding behaviour of Mediterranean sea urchins; population dynamics and structure of Mediterranean echinoderms

BRETON, GERARD

studying Mesozoic asteroid paleontology

BROWER, JAMES

taxonomy, paleoautecology, paleosynecology, ontogeny and phylogeny of Ordovician crinoids from the northern part of the midcontinent; comparative ontogeny of Ordovician and Mississippian crinoids

BUITRON-SANCHEZ, BLANCA E.

Cenozoic echinoderms (Stellerioidea and echinoidea) from Baja California, Mexico

BUSSARAWIT, SOMCHAI

Study of the echinoderms from the Andaman Sea of Thailand

BYRNE, MARIA

evolution of direct development of Australian seastars in the genus Patiriella

CAMERON, R. ANDREW

sea urchin cell lineage; gene activity during embryonic and larval development; population genetics of sea urchins; sea urchin inbred lines; signal transduction during development

CAMPBELL, ANDREW

structure and function of pedicellaria in asteroids and echinoids; zoogeography of Indian Ocean echinoderms

CANDIA-CARNEVAL, M. DANIELA

functional morphology of musculo-skeletal systems in echinoids and ophiuroids; arm regeneration in crinoids

CONAND, CHANTAL

echinoderm influences on coral reefs in La Reunion, as part of the program on functioning, degradations and regeneration of the reefs in La Reunion; sea cucumber exploitations

- CUTRESS, BERTHA M.  
changes in dermal ossicles during somatic growth in Caribbean littoral holothuroidea, Order Aspidochirotida (MS submitted to Bull. Mar. Sci.); deep-sea Holothuroidea of Puerto Rico (MS in preparation).
- DAFNI, JACOB  
echinoid growth
- DE RIDDER, CHANTAL  
symbioses between bacteria and spatangoid echinoids
- DEBENHAM, PATTY  
population genetics of the red sea urchin Strongylocentrotus franciscanus
- DIEHL, WALTER J.  
effects of environmental stress on multilocus heterozygosity-growth relationships in invertebrates
- DOBSON, WILLIAM E.  
population biology of *Ophiura sarsi* on continental slope off North Carolina; use of skeletal growth bands in ophiuroid ossicles as biological markers for sublethal predation and population ecology experiments
- DOLMATOV, IGOR Y.  
regeneration mechanisms and their changes during individual development of echinoderms
- ELISEIKINA, MARINA G.  
physiological and reparative regeneration of echinoderm internal organs
- ETNIER, SHELLEY  
comatulid crinoids
- FELDMAN, ABBY L.  
studying echinoderm larvae based on hauls taken from sites on the west coast of Ireland to monitor seasonality and presence of echinoderm larvae in the water column and linking this with lab studies on morphological variation of larvae of Luidia ciliaris/sarsi with different food conditions (MSc thesis)
- FOX, DAVID J.  
can genetic algorithms be used to position a mechanical brittlestar arm?

FUKUYAMA, ALLAN K.

looking at recovery of intertidal invertebrates in Prince William Sound, Alaska following the 1989 Exxon Valdez oil spill and am particularly interested in molluscan and echinoderm assemblages and the contrast in recovery patterns between areas that were treated with hot-water, high pressure treatment with areas that were oiled and untreated

GLUCHOWSKI, EDWARD L.

Genus Haplocrinites (Inadunata) from the Devonian of Poland

GOLDBERG, ARTHUR S.

investigating antiarthritic properties of echinoderms

GOODING, RICHARD U.

animals associated with Caribbean diadematids; animals associated with diadematid echinoids, world

GRABOWSKY, GAIL L.

examining the population genetics of sea urchins in the genus Echinometra throughout the tropical Pacific (sequencing mtDNA, actin and bindin genes for all individuals)- with S. Palumbi at Univ. of Hawaii

GREENSTEIN, BENJAMIN J.

taphonomy of crown-of-thorns starfish; comparative taphonomy of Caribbean reefs; mode of formation of Pliocene shell beds

GUILLOU, MONIQUE

population dynamics of sea urchins; study of the morphological and physiological changes in sea urchin population as a response to environmental stress (Sphaerechinus granularis)

HADEL, VALERIA FLORA

respiratory metabolism of Chiridota rotifera (small holothuroid found in beaches of coarse sand)

HAMZA HASSAN, MOHAMED

ecology and biology of echinoderms from Gulf of Suez - Red Sea

HARTSOCK, FRANKLIN B.

biology of Asterias amurensis in the eastern Bering Sea and the Gulf of Alaska; attempt to age sea stars by madreporites, using Asterias amurensis and Leptasterias hexactis; cooperative study with John Lawrence on the incidence of missing arms of various species of sea stars

HESS, HANS K.

writing a book on fossil crinoids, concentrating on assemblages (co-authors: Carlton E. Brett and Michael J. Simms), to be published by Cambridge University Press; also researching Mesozoic starfish

HODGSON, ALAN N.

reproduction of southern African echinoderms; feeding biology of south African holothurians

HOLTERHOFF, PETER F.

paleoautecology and paleocommunity ecology of Late Paleozoic crinoids; paleoecology and systematics of the Catacrinidae; paleoecology and systematics of the Ampelocrinacea; dynamics of the Late Permian crinoid extinctions and origin of the earliest Triassic articulates

HOOPEr, ROBERT G.

ecology of Strongylocentrotus drobachiensis

HOROWITZ, ALAN STANLEY

bibliography of the Blastoidea (with J. Waters)

HOSHI, MOTONORI

egg-jelly components responsible for the induction of acrosome reaction in starfish; signal transduction in starfish oocytes; glycosphingolipids of sea urchins and starfish

HOTCHKISS, FREDERICK H.C.

larval homeomorphism, Loven's law and adult ray homologies in echinoids, ophiuroids and edrioasteroids; isolated ophiuroid vertebrae and ossicles from Devonian, Bohemia (with Petr & Prokop); Paleozoic ophiuroid morphology & evolution; teratology of sea stars; tetramerism/hexamerism in echinoids and stelleroidea; relation of larval axis to adult axis symmetry

IRIMURA, SEIICHI

taxonomic studies of Japanese ophiurans; taxonomic significance on ossicles of stomach wall of ophiurans

IVY, W. GRISILDA

seed production and sea ranching of sea cucumbers

JABLONSKI, DAVID

onshore-offshore and latitudinal patterns in the origins of higher taxa, and their subsequent shifts in environmental and latitudinal distribution; studying post-Paleozoic echinoids and stalked crinoids; studying mainly molluscan but some echinoid mass extinction and recovery patterns, especially at the Cretaceous-Tertiary boundary

- JAECKLE, WILLIAM B.  
Functional morphology of somatocoels in planktotrophic echinoderm larvae; levels of nutritional integration in echinoderm larvae
- JAMES, DANIEL B.  
seed production and sea ranching of sea cucumbers
- JELL, PETER A.  
Australian fossil echinoderms - Cambrian to Tertiary (excluding Tertiary echinoids) particularly, 1. Silurian & Devonian crinoids & asteroids, 2. Permian crinoids, 3. Carboniferous crinoids
- KLINGER, THOMAS S.  
isolation and characterization of digestive enzymes from temperate, subtropical, and Antarctic echinoderms
- KOBAYASHI, NAOMASA  
marine pollution bioassay by using sea urchin eggs
- KRISTAN-TOLLMAN, EDITH M.K.  
Triassic crinoids
- KURIHARA, TAKEO  
distribution of starfishes
- LAMBERT, PHILIP  
taxonomy of west coast sea cucumbers; describing new species DNA analysis of holothuroids
- LAWRENCE, JOHN M.  
characteristics of arm regeneration in starfish; comparative nutrition of sea urchins
- LE MENN, JEAN  
Paleozoic crinoids western-Europe, Africa
- LeCLAIR, ELIZABETH E.  
ophiuroid arm skeletal morphology and biomechanics
- LEVERONE, JAY R.  
reproductive cycles of Astropecten and Luidia in lower Tampa Bay
- LEVITAN, DONALD R.  
ecological and evolutionary consequences of sperm limitation in echinoderms; echinoid grazing pressure in the Caribbean
- LIAO, YULIN  
lesser known and new taxa of dendrochirote holothurians from China

- LITVINOVA, NINA M.  
 investigation on morphological and functional structures of the brittlestar's arms; revision of the genus Ophiomyces (Ophihelinae)
- LORDSON, JINBERT  
 seed production and sea ranching of sea cucumbers
- MAIER, MARTA  
 studying asterosaponius
- MARCOS-DIEGO, CONCEPCION  
 study of benthic fauna and flora from the southern of the Livingston Island (South Shetland, Antarctica).
- MARSH, LOISETTE M.  
 revision of Nardoa and Gomophia (Asteroidea: Ophidiasteridae) - with F.W.E. Rowe; echinoderms of the northwest shelf of Western Australia
- MATERIA, CHRISTINE J.  
 the distribution and abundance of asteroids in Tasmania (funded through Australian Heritage Commission); investigation into the endemic Tasmanian seastar Marginaster littoralis (funded through Australian Nature Conservation Agency).
- MATTOS-SEGOVIA, ELIO  
 the assessment of bioinducers of the settlement in larvae of sea urchin Loxechinus albus
- MCKENZIE, J. DOUGLAS  
 subcuticular bacteria in echinoderms; antifouling mechanisms of echinoderms
- MEDEIROS-BERGEN, DOT E.  
 molecular identification of echinoderm larvae transport, dispersal and small scale hydrodynamics of sea cucumber larvae
- MEIJER, LAURENT  
 cell division cycle control using starfish oocytes and sea urchin eggs; anti-mitotic drugs discovery using purified kinase from starfish oocytes
- MESSING, CHARLES G.  
 ecology and taphonomy of Bahamian stalked crinoids (Isocrinida), including growth rates, behavior and distributional controls; ecology, zoogeography and systematics of tropical Indo-West Pacific comatulids



- MIRONOV, ALEXANDER  
taxonomy and biogeographic history of recent holasteroid  
echinoids
- MLADENOV, PHILIP V.  
ecology and population genetics of asexual echinoderms;  
reproductive ecology and population genetics of the New Zealand  
sea urchin, Evechinus chloroticus; reproductive biology and  
ecology of the euryalinid snake star, Astrobrachion  
constrictum (with B. Stewart); comparative reproductive biology  
of South Pacific ophiuroids (with R. Lan); ecology and  
reproduction of Holothuria atra in Fiji (with J. Seeto);  
reproductive biology of the New Zealand comatulid crinoid,  
Oxycomanthus plectrophorum (with D. Nichol)
- MUKAI, HIROSHI  
ecosystem study in tropical and boreal seagrass beds;  
bioturbation and restructural effects on material flow at  
interface of sea floor
- MUNK, ERIC J.  
growth/recruitment with green urchins
- NAKAMURA, RAYMOND K.  
hydrodynamics and morphometric variation in the Pacific sand  
dollar Dendraster excentricus
- NAKANO, EIZO  
extracellular matrix in the sea urchin embryo
- NEBELSICK, JAMES H.  
taphonomy of Red Sea echinoids; paleobiogeography of Miocene  
echinoids
- NESTLER, HELMUT  
Cretaceous echinoids
- NEUMANN, CHRISTIAN  
functional morphology and ecology of some Toxasterida from the  
Middle Cretaceous (Albium-Cenomanium) of Spain; traces or  
predation of fossil and recent sea urchins
- NISHIHARA, MORITAKA  
population studies on Echinometra mathaei and Archaster typicus
- O'CONNOR, BRENDAN D.S.  
ophiuroid population structure and ecology
- OJI, TATSUO  
evolutionary paleontology of Crinoidea

- PABIAN, ROGER K.  
Late Pennsylvanian crinoids, systematics, paleoecology,  
biostratigraphy
- PARDO, ROBERTO A.  
ecology and population dynamics of echinoderms (particularly  
echinoids and ophiuroids) - currently, population dynamics of  
sand dollars
- PARMA, GRACIELA  
fossil echinoids
- PAULS, SHEILA MARQUES  
inventory of species and bibliography of the echinoderms from  
Venezuela, South America
- PENCHASZADEH, PABLO E.  
ecology of sand dollars (Mellita spp.); trophic ecology of  
asteroids
- PEREZ-RUZAFÁ, ANGEL  
wetlands and coastal lagoons of Galapagos Islands (Ecuador) -  
basis for its protection and management; Iberic fauna; study of  
benthic fauna and flora from the southern of Livingston Island  
(South Shetland, Antarctica); design of new algorithms for the  
primary productivity and water quality prediction in coastal  
zones using remote sensing techniques.
- PIEPENBURG, DIETER  
ecology of brittle stars in Eurasian Arctic seas
- PROKOP, RUDOLF JAN  
new implications for palaeobiology of float-bearing crinoids from  
the Bohemian Upper Silurian - Lower Devonian; genus Pygmaeocrinus  
Bouska (Crinoidea) in the Devonian of Barrandian (Czech Republic)  
with Dr. V. Petr
- ROCCATAGLIATA, ALEJANDRO J.  
chemistry of physiologically active saponins of starfishes and  
sea cucumbers in the South Atlantic Ocean
- ROGERS-BENNETT, LAURA  
culturing of larval red sea urchins for experimental outplanting  
in northern California (California Dept. Fish & Game); growth  
studies of red sea urchins in northern California
- ROSE, EDWARD P.F.  
Jurassic irregular echinoids; Cenozoic holoctypoid echinoid  
Echinoneus

- ROWE, FRANK  
Indo-west-Pacific echinoderms and their systematics and zoogeography
- SCALLY, KEVIN  
tooth form function and evolution of invertebrate dental systems, especially tooth sharpening behaviour (thegosis)
- SCHELTEMA, RUDOLF S.  
long distance dispersal of teleplanic larvae and the relevance of such transport to gene flow and biogeography of tropical invertebrate species
- SCHOPPE, SABINE  
working with Quinones on ophiuroids of Providencia Island, Caribbean Colombia; taxonomy, reproduction and ecology of ophiuroids; association of echinoderms with other taxa
- SCHUETZ, ALLEN W.  
development of a new model for multiparameter analyses of perturbations of gametic and embryonic processes
- SHEPHERD, SCORESBY A.  
management of echinoderm fisheries
- SIBUET, MYRIAM  
taxonomy and ecology of deep sea echinoderms
- SINGLETARY, ROBERT L.  
role of Arbacia punctulata in the bottom community of Long Island Sound
- SKOLD, MATTIAS  
production, dynamics and demography of infaunal brittle stars (Amphiura filiformis and A. chiajei); regeneration and gonad development under different environmental conditions as hypoxia, contaminants and organic enrichment
- SMITH, ALBERT C.  
writing book about marine animals in medical research (including echinoderms)
- SMITH, ANDREW B.  
morphological and molecular phylogenies for echinoderms; post-Palaeozoic echinoid systematics and evolution
- SOLIS-MARIN, FRANCISCO A.  
evolution of echinoids; taxonomy of the phylum
- STAMPANATO, SALVATORE  
Antarctic starfish

- STANCYK, STEPHEN E.  
population biology, predation and regeneration of Ophiura sarsi;  
sublethal predation of echinoderms; use of markers and growth  
rings of ophiuroid ossicles for age/growth studies
- STEWART, BRIAN G.  
reproduction and growth of the euryalinid ophiuroid Astrobrachion  
constrictum
- STICKLE JR., WILLIAM B.  
the systematic status, zoogeographical distribution, and  
environmental physiology of sea stars belonging to the  
Leptasterias species complex; focusing on species differences in  
the adaptation to a freshwater lens system that develops annually  
at Little Port Walter, southern tip of Baranoff Island, south-  
eastern Alaska (with Jeff Tamplin, Ph.D. Student)
- STRATHMANN, RICHARD R.  
developmental plasticity of larvae in response to food
- TABLADO, ALEJANDRO  
systematics of Asteroidea for southwestern Atlantic
- TAKAHASHI, KEIICHI  
structure and function of the madreporite; motile mechanism in  
sperm flagella
- THANDAR, AHMED S.  
holothurians collected by the South African Museum's Africana II  
cruises; new records of holothurians from the northern coast of  
Natal; southern African holothuroids of the family Holothuriidae
- THIERRY, JACQUES  
systematics, taxonomy, evolution, palaeoecology and  
biostratigraphy of Jurassic echinoids, especially irregular ones;  
possible extension to Cretaceous but only in collaboration to  
compare biodiversity between the two systems
- THORSEN, MARIANNE S.  
ecophysiology of irregular echinoids (spatangoids)
- UBAGHS, GEORGES J.  
echinoderms from the Upper Cambrian of the Montagne Noire  
(southern France)
- VADET, ALAIN  
Jurassic echinoids
- VAN DER HAM, RAYMOND  
Upper Cretaceous and Danian, SE Netherlands and NE Belgium  
(Maastrichtian area)

VISTISEN, BODIL

studying the two brittle stars Ophiura albida and Amphiura filiformis concerning their tolerance towards hypoxi with and without the presence of hydrogenesulphide

WAREN, ANDERS H.

gastropods parasitizing echinoderms

WEBSTER, GARY D.

working on several Carboniferous crinoid faunas from the western U.S.; compiling the bibliography and index of Paleozoic crinoids & coronates, worldwide; relationship of Permian crinoid faunas of western Australia and Timor

WILKIE, IAIN C.

functional morphology, biomechanics and physiology of the echinoid lantern; morphological and mechanical aspects of the starfish autotomy; morphological and mechanical aspects of the ophiuroid mouth-frame; variable tensility of brittlestar ligaments

WORHEIDE, GERT

comparative biometrical and ecomorphological studies on boreal and Mediterranean populations of the Echinocardium cordatum (Pennant, 1777) group (Echinoidea, Spatangoida)

WRAY, GREGORY A.

developmental bases for major life history transformations in echinoderms; evolution of echinoderm larvae; origin and diversification of echinoderm body plans; phylogeny of camarodont sea urchins

ZAVODNIK, DUSAN V.

contributions to fauna and flora of the Adriatic Sea

## REQUESTS AND INFORMATION

Bentley, A. - any news pertaining to sand dollars or any irregular urchins. Any news on occurrence or distribution of Echinodiscus bisperforatus from elsewhere around the world.

Breton, G. - Who could give to the Natural History Museum of Le Havre (France) one or two good specimen(s) (with or without spines) of the burrowing spatangoid sea-urchin Pericosmus? This rare bathyal echinoid is thought to be the present descendant of the Cretaceous Micraster. In a showcase dealing with the evolution of Micraster, I have put pictures of Pericosmus, but I would better present one or two specimen(s).

Conand, C. - As coordinator of the Beche-de-mer Information Bulletin published by the South Pacific Commission, I shall appreciate information on commercial sea-cucumbers, dealing with ecology, biology and fishery.

De Ridder, C. - requests information on symbioses involving bacteria and echinoderms.

Feduccia, J. - I'm seeking stock footage (film or video) of sea cucumbers with written permission for its use in a motion picture. The footage will be used to enhance the story line of an action-adventure sci-fi movie. Close-ups of cucumber's mouths and tentacles, the process of burrowing in the sand, habitat shots with other invertebrates, eating, a cluster of immature cucumbers, and an evisceration would be helpful. An evisceration in slow motion would be of particular usefulness. The story actually depends on some cucumber footage, and can (will) be modified to include more if it's spectacular. - If someone doesn't feel comfortable sending material directly to us, we'll try to make arrangements with a local library, or conform to other conditions. Any person or institution helping with this project obviously deserves a credit; we simply request specifics on how the credit should read. Please contact: Joseph Feduccia, 8626 Braewick, Houston, TX 77074-7708. Ph: 713-777-5162. FAX: 713-777-7445.

Feldman, A.L. - requests information on anything to do with echinoderm larvae, especially genus Luidia. If there is any new information on metamorphoses of ophiuroid larvae I would be especially interested in that, as I have specimens from plankton hauls I wish to identify. Also if anyone knows anything about finding larvae in the plankton I would like to get in touch with them to compare notes.

Gluchowski, E. - interested in information on Crinoidea in paleoecology and taphonomy, stratigraphy, morphology and stem taxonomy.



- Gooding, R.U. - requests examples of calcification of test from parasitism, e.g., thickening of terminal part of spine by rasping of Microlepas diadema, crater-like swellings caused by rasping of Rugilepas pearsi, both on Indo-Pacific diadematids. Also, requests copepods "external to the buccal cavity (within the Aristotle lamp)" of 2 Echinometra spp. and Tripneustes esculentus (ventricosus?), Puerto Rico.
- Guillou, M. - requests information on the plasticity of echinoderms in response to environment; temporal successions in echinoderm populations of the littoral ecosystems.
- Hartsock, F.B. - requests information on - the biology of Asterias species and Leptasterias spp.; medicinal, or other uses for sea stars; the ecology of Pycnopodia helianthoides, especially in relation to Paralithoides camtschatica; methods for aging sea stars; studies on missing arms of sea stars; studies on regenerative capabilities of sea stars.
- Hotchkiss, F.H.C. - information and material of 4-part and 6-part echinoids arising at metamorphosis (which is the extra/missing part?). Information and material of teratology of starfish.
- James, D.B. - would like references and, reprints if possible, on hatchery and culture of sea cucumbers.
- Kristan-Tollman, E. - interested in all papers about Triassic echinoderms for the Zentralblatt Geol. Pal. II, Referier Organ, Stuttgart, Germany. As the reporter for Holothuroidea, I would be happy to receive your papers on all aspects of fossil holothurians. Please send them to: Edith Kristan-Tollman, Scheibenbergstr. 53/6, A-1180 Wien, Austria. Also, I'm working on Comatulida and Roveacrinida and would be interested in an exchange of literature.
- Kurihara, T. - information on space pattern, population dynamics, and life history of starfishes.
- Lambert, P. - Trying to locate specimens of Cucumaria fallax Ludwig from Alaska. Apart from specimens at Smithsonian and one lot from Fairbanks have not located any.
- Moura-Britto, M. - I would like to know about recent studies of scanning electron microscopy in Asteroidea and Ophiuroidea.
- Mukai, H. - Suggests that it is time to publish a journal of echinoderm biology.
- Oji, T. - Information about new or undescribed crinoid occurrences from the Mesozoic and Cenozoic.

Pardo, R. - Is anyone working on ecology and population dynamics of echinoids (particularly sand dollars); also, bioerosion in coral or rocks for the echinoderms ?

Rowe, F.W.E. - would be very grateful to receive reprints and be put on reprint mailing list. I am particularly interested in taxonomic, zoogeographic, recent and palaeontological papers.

Segovia, E.M. - information about cultivation of sea urchins.

Shepherd, S.A. - currently engaged on a long-term project on the problems of stock assessment in dive-fisheries (which include molluscs, sea urchins and sea cucumbers). Of particular interest are: estimation of abundance, fertilization success in relation to affects of reduced abundance on recruitment, stock recruitment relations and fishery models. I would very much like to receive reports/reprints on these matters for sea-urchin or sea-cucumber fisheries.

Stewart, B.G. - information on euryalinid reproduction.

Thandar, A.S. - would like to receive/purchase English translations of: 1. Panning's (1929-35) revisions of the family Holothuriidae; 2. Heding and Panning's (1954) revision of the family Phyllophoridae.

Thierry, J. - if anyone has collected irregular echinoids in Jurassic deposits of western Europe please contact me; also, if anyone knows about or has ancient collections; especially interested in Collyritids of Metaporhinus group to make a revision of the genus and its species.

#### ITEMS OF INTEREST

Scally, K.B. - I compiled a recipe book of echinoid delights. Also, references on electronic database - like "Reference Manager" bought by subscription - including journals and books.

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Contributed by F.W.E. Rowe

CLARK AND DOWNEY, 1992. STARFISHES OF THE ATLANTIC: FURTHER ERRATA

There was a late change (at page proof stage) in the symbols used in the distribution table (table 83, pp. 490-502) from plus

signs in various types according to the depths, to the letters S, M and D (for shallow, medium and deep). Unfortunately we omitted to make a corresponding change in the explanatory text concerning the apparent anomaly of records more than 200 m (M) being used in columns primarily for the continental shelf. Please note the following modifications:

Page 488

Line 21: Substitute 'As M rather than S' for 'but in italics'.

Lines 22 & 23: Delete whole sentence beginning 'A corollary -'.

Page 490

Caption to Table 83, center of line 2 should read: 'c. 500+ m'.

Please ignore the occasional use of italics or bold type for a few entries in the table which crept in unnoticed.

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## RECENT PUBLICATIONS ON ECHINODERMS

- Ahearn, C.G. 1994. Catalog of the Type Specimens of Seastars (Echinodermata: Asteroidea) in the National Museum of Natural History, Smithsonian Institution. Smithsonian Contributions to Zoology. (in press).
- Amano, T., Y. Okita, M. Hoshi. 1993. Low-Na<sup>+</sup> seawater induces the acrosome reaction and histone degradation of starfish sperm in the absence of egg jelly. *Develop. Growth, Differ.* 35: 521-529.
- Amano, T., Y. Okita, T. Yasumoto, M. Hoshi. 1993. Maitotoxin induces acrosome reaction and histone degradation of starfish Asterina pectinifera sperm. *Zool. Sci.* 10: 307-212.
- Ameziane-Cominardi, N. (in press). Les Pentacrines récoltées lors de la campagne KARUBAR (Indonesia). In *Resultat des campagne, MUSORSTOM*. 1994.
- Andrietti, F., M.D. Candia Carnevali, I.C. Wilkie. 1993. A bio-mechanical comparison of the lantern of the cidarid sea-urchin Stylocidaris affinis with the typical camarodont lantern. *J. Zool., London*, 231: 596-610.
- Arntz, W.E., T. Brey, D. Gerdes, M. Gorny, J. Gutt, S. Hain, M. Klages. 1992. Patterns of life history and population dynamics of benthic invertebrates under high Antarctic conditions in the Weddell Sea. *Proc. 25th Eur. mar. Biol. Symp.*: 221-230.
- Ausich, W.I., T.K. Baumiller. (in press). Taphonomic method for determining muscular articulations in fossil echinoderms: a test for the occurrence of muscles in Lower Mississippian cladid crinoids. *Palaios*.
- Ausich, W.I., T.K. Baumiller. (in press). Column regeneration in an Ordovician crinoid (Echinodermata): Paleobiologic implications. *Journal of Paleontology*.
- Avilov, S.A., V.I. Kalinin, A.I. Kalinovsky, V.A. Stonik. 1991. Cucumarioside G2 - minor triterpene glycoside from sea cucumber Eupentacta fraudatrix. *Khim. Prirod. Soedin*, N 3: 438-439.
- Avilov, S.A., A.I. Kalinovsky, V.A. Stonik. 1990. New triterpene glycoside from sea cucumber Neothyonidium magnum. *Khim. Prirod. Soedin*, N 1, 53-57.
- Avilov, S.A., A.I. Kalinovsky, V.A. Stonik. 1991. Two new triterpene glycosides from sea cucumber Duasmodyctyla kurilensis. *Khim. Prirod. Soedin*, N 2: 221-226.
- Avilov, S.A., V.A. Stonik, A.I. Kalinovsky. 1990. The structure of four new triterpene glycosides from sea cucumber Cucumaria japonica. *Khim. Prirod. Soedin*, N 6: 787-793.
- Avilov, S.A., V.I. Kalinin, O.A. Drosdova, A.I. Kalinovsky, V.A. Stonik, E.N. Gudimova. 1993. Triterpene glycosides of sea cucumber Cucumaria frondosa. *Khim. Prirod. Soedin*, N 2: 260-263.
- Azzi, L., L. Meijer, A.C. Ostvold, J. Lew, J.H. Wang. 1994. P15, a cdk4- and cdk5- binding protein. *J. Biol. Chem.*, (in press).
- Balser, E.J., E.E. Rupert. 1993. Ultrastructure of axial vascular and coelomic organs in comasterid featherstars (Echinodermata: Crinoidea). *Acta Zoologica* 74(2): 87-101.
- Balser, E.J., E.E. Rupert, W.B. Jaekle. 1993. Ultrastructure of

- the coeloms of *Auricularia* larvae (Holothuroidea:Echinodermata): evidence for the presence of an axocoel. Biol. Bull. 185:86-96.
- Barker, M.F., R. Scheibling, P.V. Mladenov. 1992. Seasonal changes in population structure of the fissiparous asteroids Allostichaster insignis (Farquhar) and Coscinasterias calamaria (Gray). In: Echinoderm Research 1991. L. Scalera-Liaci and C. Canicatti (eds.) A.A. Balkema, pp. 191-196.
- Bartsch, I. 1994. Siphonostomatoide Copepoden auf Ophiacanthiden (Ophiuroidea) Beschreibung von drei Cancerilla-Arten (Cancerillidae, Copepoda) aus der Antarktis. Mitt. hamb. zool. Mus. Inst. (in press).
- Baumiller, T.K. 1993. Crinoid stalks as cantilever beams and the nature of stalk ligament. Neu's Jahrbuch für Geologie and Paläontologie, Abhandlungen 190: 115-133.
- Baumiller, T.K., M. Labarbera. 1993. Mechanical properties of the stalk and cirri of a sea lily. Comparative Biochemistry and Physiology 106A: 91-95.
- Baumiller, T.K. 1993. Survivorship analysis of Paleozoic crinoidea: effect of filter morphology on evolutionary rates. Paleobiology 19: 304-321.
- Baumiller, T.K. 1993. Boreholes in Devonian blastoids and their implications for boring by platyceratids. Lethaia 26: 41-47.
- Belyaev, G.M., A.N. Mironov. 1993. Deep-sea starfishes of the genus Hyphalaster (Porcellanasteridae). Transactions of the P.P. Shirshov Institute of Oceanology, 127: 205-217.
- Bentley, A.C., A.C. Cockcroft. 1994. Sublittoral sand dollar (Echinodiscus bisperforatus) communities in two bays on the South African south coast. (in press).
- Bentley, A.C. (in press). Sand dollar (Echinodiscus bisperforatus) distribution and abundance in South Africa - implications for conservation and legislation. (short note).
- Birenheide, R., S. Amemiya, T. Motokawa. 1993. Penetration and storage of sponge spicules in tissues and coelom of spongivorous echinoids. Mar. Biol. 115: 677-683.
- Birenheide, R., T. Motokawa. 1994. Morphological basis and mechanics of arm movement in the stalked crinoid Metacrinus rotundus (Echinodermata, Crinoidea). Mar. Biol., in press.
- Blake, D.B. 1993. A new asteroid genus from the Jurassic of England and its functional significance. Palaeontology 36: 147-154.
- Blake, D.B. 1993. An unusual new asteroid (Echinodermata: Asteroidea) from the Cretaceous of California. Journal of Paleontology 67: 586-589.
- Blake, D.B., T.E. Guensburg. 1993. New lower and middle Ordovician stelleroids (Echinodermata) and their bearing on the origins and early history of the stelleroid echinoderms. Journal of Paleontology 67: 103-113.
- Bonasoro, F., M.D. Candia Carnevali. 1994. Atypical chordoid structures in the Aristotle's lantern of regular echinoids. Acta Zool., 75: 89-100.
- Borzzone, C.A. 1992. Spatial distribution and growth of Mellita quinquiesperforata (Leske, 1778) on a sandy beach of southern Brazil. Neritica, Pontal do Sul, Pr, 7 (1/2).



- Borzzone, C.A., J.R.B. de Souza, R. Brogim, S.A. Netto, A.G. Soares. (no prelo). Litoral do Parana. Em: A aplicabilidade dos atuais conhecimentos sobre o bentos da região sudeste brasileira a programas de monitoramento das atividades petrolíferas na Bacia de Santos. P.C. Lana Ed., Petrobras.
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- Breton, G. 1992. Réexamen de l'holotype de Pentaceros dilatatus Meunier, 1906 [= Nymphaster obtusus (Forbes, 1848)], Goniasteridae (Asteroidea, Echinodermata), Crétacé supérieur du Bassin de Paris. Bull. Mus. natl. Hist. nat., Paris, 4e sér., 14, section C, 3-4: 267-276, 1 fig.-texte, 1 pl.
- Breton, G. 1993. Un spécimen de très grande taille de Discoides concavus Bucaille, 1883 (Echinoidea, Discoidae) du Cénomanién moyen de la région de Fécamp (Seine-Maritime). Bull. trim. Soc. géol. Normandie et Amis Muséum du Havre, 80, 1 et 2, p. 13-15, fig. 1.
- Breton, G., D. Lefebvre, M. Fouray. 1993. Anomalie de croissance chez un Echinocorys gr. scutata Leske, 1778; ou bien Stenonaster tuberculata (DeFrance, 1816) égaré dans les eaux boréales? Bull. trim. Soc. géol. Normandie et Amis Muséum du Havre, 80, 3 et 4, 3e-4e trim., p. 26-28, fig. 1-2.
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**FOSSIL CRINOID COLLECTIONS  
AT  
THE NATIONAL MUSEUM OF NATURAL HISTORY  
SMITHSONIAN INSTITUTION**

Visitors to the National Museum of Natural History's Department of Paleobiology fossil crinoid collections, housed in the Springer Room, will find some changes. Tom Kammer and Bill Ausich are in the process of curating selected portions of those collections; the project is expected to be completed in 1995.

The Department's holdings of fossil crinoids are housed in four main collections, 1. type, 2. biologic, 3. special (e.g., Budenbach), and 4. miscellaneous. Our efforts are being concentrated on the biologic and miscellaneous collections.

The crinoid biologic collection was arranged in the systematic scheme of Wachsmuth and Springer (1881-1886); many generic identifications had not been updated. When our task is completed, the biologic collection will be in the systematic order of the Treatise on Invertebrate Paleontology and specimen identifications updated to the best of our ability.

The miscellaneous collections are stored throughout the Springer Room in small units of specimens related to each other by locality, collector, identification, etc. The majority of those specimens will be consolidated into a single, stratigraphically organized collection to facilitate access; the remaining specimens will have their identifications updated and be integrated into the crinoid biologic collection.

Similar curation for other Springer Room collections has been performed (e.g., Post Paleozoic Echinoid Collection by Andrew Smith, Blastoid Biologic Collection by Alan Horowitz and Johnny Waters). The Department of Paleobiology houses some of the finest collections of fossil echinoderms in the world and these improvements will further secure their value to science and public programs.

W.I. Ausich

# PAPERS PRESENTED AT MEETINGS

**8TH INTERNATIONAL ECHINODERM CONFERENCE, DIJON, FRANCE, September 6-10, 1993.** Proceedings of the 8th International Echinoderm Conference, Dijon, France, 1993: In: B. David et al. (eds.). Echinoderms: Dijon. Balkema Press, Rotterdam.

- Ameziane-Cominardi, N., M. Roux. Mosaic pattern of ontogeny in modern stalked crinoids. Consequences for evolutionary paleontology and taxonomy.
- Baumiller, T.K. Patterns of extinction and faunal dominance in the record of Paleozoic crinoid genera.
- Birenheide, R., S. Amemiya, T. Motokawa. Video observations of the movements of the stalked crinoid *Metacrinus rotundus* (Echinodermata, Crinoidea).
- Birenheide, R. T. Motokawa, S. Amemiya. Morphology and biomechanics of the "problematical" ligament in the arm of *Metacrinus rotundus*.
- Bonasoro, F., M.D. Candia Carnevali. Chordoid structures in regular sea urchins.
- Byrne, M., M.J. Anderson. Hybridisation of sympatric *Patiriella* species in New South Wales.
- Candia Carnevali, M.D., I.C. Wilkie, F. Bonasoro. Structural and mechanical aspects of the mouth-frame of the brittlestar *Ophioderma longicaudum* (Retz.)
- Cerra, A., M. Byrne. Ultrastructure of wrinkled blastula formation in the asteroid *Patiriella exigua*.
- Cobb, J.L.S., K.M. Begbie. Aspects of the hyponeural nervous system of the brittlestar, *Ophiura ophiura*.
- Cross, N.E., E.P.F. Rose. Predation of the Upper Cretaceous spatangoid echinoid *Micraster*.
- De Ridder, C. Symbiosis with sulfo-oxidizing bacteria in spatangoids: a possible pass for fine-grained sediments ?
- De Ridder, C. Symbioses between spatangoids (Echinoidea) and the Thiothrix-like bacteria (Beggiatoales).
- Drummond, A.E. Aspects of the life history biology of three species of sea urchin on the South African east coast.
- Foltz, D.W., W.B. Stickle Jr. Genetic structure of four species in the *Leptasterias hexactis* complex along the Pacific coast of North America.
- Grigolava, I., J.D. McKenzie. Biochemical studies of echinoderm surface coats using radiolabelling techniques.
- Hamel, J.-F., A. Cabanac, J.H. Himmelman. Morphological adaptations of the sand dollar *Echinarachnius parma*.
- Hamel, J.-F., A. Mercier. Behavioural response of the basket star *Gorgonocephalus arcticus* in reaction to mechanical stimulation.
- Hamel, J.-F., A. Mercier. Influence of environmental factors on pre spawning behaviour and spawning and developmental biology of the brooding starfish *Leptasterias polaris*.
- Hamel, J.-F., G. Desrosiers. Larval fixation and small scale migration of the sea cucumber *Cucumaria frondosa*.



- Heinzeller, Th., N. Ameziane-Cominardi, U. Welsch. Light and electron microscopic studies on arms and pinnules of the cyrtocrinid *Gymnocrinus richeri*.
- Jagt, J.W.M., R.W.J.M. Van Der Ham. Early Palaeocene marsupiate regular echinoids from NE Belgium and SE Netherlands. (poster).
- Kelly, M., J.D. McKenzie, M. Barker. Sub-cuticular bacteria: their incidence in the echinoderms of the British Isles and New Zealand.
- King, C.K., O. Hoegh-Guldberg, M. Byrne. The reproductive cycle of the sea urchin *Centrostephanus rodgersii* in New South Wales.
- Klinger, T.S., C.R. Johnson, J. Fell. Sediment utilization, niche breadth, and niche overlap of Aspidochirotida (Echinodermata: Holothuroidea) in the lagoon and reef flat of Heron Island, Great Barrier Reef.
- Lawrence, J.M., M. Byrne. Allocation of resources to body components in *Heliocidaris erythrogramma* and *Heliocidaris tuberculata* (Echinodermata: Echinoidea).
- Lawrence, J.M., M. Byrne. A comparison of the sizes and proximate composition of *Heliocidaris erythrogramma* and *H. tuberculata*.
- Lawrence, J.M., J.B. McClintock. Energy acquisition and allocation by echinoderms in polar seas: adaptations for success?
- LeClair, E.E. Quantitative morphological and microstructural variation in the vertebral ossicles of the Ophiurida (Ophiuroidea).
- Le Menn, J. Importance of columnals in the reconstruction of Paleozoic crinoid communities.
- Liao, Y., A.M. Clark. An introduction to the echinoderms of southern China.
- Litvinova, N.M. The life forms of Ophiuroidea (based on the morphological structures of their arms).
- Lumingas, L., M. Guillou. Plasticité de l'oursin, *Sphaerechinus granularis* (Lamarck), face aux variations de l'environnement.
- Marsh, L.M. Echinoderms of the Houtman Abrolhos Islands, Western Australia and their relationship to the Leeuwin Current.
- McKenzie, J.D. Using the very small to comment on the very large: can ultrastructure be of use in phylogeny?
- Messing, C.G. Comatulid crinoids of Madang, Papua New Guinea, and environs: diversity and ecology.
- Messing, C.G. Crinoid meadows of the West Indies: distribution, responses to flow, disarticulation, sediment production and taphonomy.
- Moloney, P., M. Byrne. Oogenesis in the ophiuroid *Ophionereis schayeri*.
- Nakamura, R.K. Going with the flow: hydrodynamic limits to the distribution of the Pacific sand dollar, *Dendraster excentricus*.
- Nebelsick, J.H., S. Kampfer. Taphonomy of *Clypeaster humilis* and *Echinodiscus auritus* (Echinoidea, Clypeasteroidea).
- Oji, T., T. Okamoto. Evolution of arm autotomy and arm branching pattern in stalked and stalkless crinoids.
- Penchaszadeh, P.E. Population ecology of the sand dollar *Mellita quinquiesperforata latiaambulacra* Clark, 1940 on the west-central coast of Venezuela.

- Rochette, R., J.-F. Hamel, J.H. Himmelman. Search, detection and localization of prey by a subtidal asteroid, *Leptasterias polaris* (Müller and Troschel).
- Reunov, A.A., A.N. Hodgson. An ultrastructural investigation of spermatogenesis and sperm structure in six species of South African sea urchin.
- Rose, E.P.F. First and last occurrence of echinoid families and the nature of their fossil record.
- Schoppe, S., A. Holl. *Ophiothrix* n.sp. (Ophiuroidea: Ophiotrichidae) from Colombia, a protandric hermaphrodite that broods its young.
- Stancyk, S.E., R.B. Aronson, W.E. Dobson, R.J. Feller, J.D. McKenzie. Predation and regeneration of *Ophiura sarsi* on the U.S. continental slope: use of a manned submersible to perform in situ experiments.
- Stewart, B.G., P.V. Mladenov. Aspects of the reproduction and anatomy of the euryalinid snake star *Astrobrachion constrictum*.
- Stickle, W.B., Jr., D.W. Foltz. Habitat affinities of species in the *Leptasterias hexactis* complex along the Pacific coast of the continental United States.
- Thandar, A.S. 1993. A new species of the holothuroid genus *Phyllophorus* from South Africa.
- Thandar, A.S. 1993. Character divergence and cladistic relationships of the southern African genera and subgenera of the family Holothuriidae.
- Thierry, J., D. Néraudeau. Variations in Jurassic echinoid biodiversity of ammonite zone levels: stratigraphical and palaeobiological implications.
- Tsuchi, A., R. Birenheide, T. Motokawa. Nervous control of the mechanical properties of the tooth support in echinoids.
- Tuwo, A., C. Conand. 1993. Fecundity of three temperate holothurians with pelagic development.
- Wasson, K.M., T.S. Klinger. Changes in nucleic acid levels in the gut of *Strongylocentrotus droebachiensis* (Echinoidea) and the pyloric caeca of *Asterias forbesi* (Asteroidea) in conjunction with the annual reproductive cycle.
- Wray, G.A. Larval morphology and echinoderm phylogeny.

**XII CONGRESO NACIONAL DE ZOOLOGÍA. SOCIEDAD MEXICANA DE ZOOLOGÍA Y UNIVERSIDAD AUTÓNOMA DE NUEVO LEÓN. MÉXICO. MONTERREY, N.L. MÉXICO, DECEMBER 7-11, 1993.**

- Anzo Martínez, A.D., F.A. Solís-Marín. Los ofiuroideos (Echinodermata: Ophiuroidea) de la Pedregosa Grande, municipio de Zihuatanejo, Guerrero, México.
- Buitrón Sánchez, B.E., F.A. Solís-Marín. Distribución de *Meoma ventricosa grandis* Gray, 1851 (Echinodermata: Brissidae) en la región occidental de México.
- Ramírez Murillo, R., F.A. Solís-Marín, X.M. Alvares. Asteroideos (Echinodermata: Asteroidea) en dos áreas de Zihuatanejo, Guerrero.

Solís Marín, F.A., J. Torres Vega, A.D. Anzo Martínez. Ofiuroideos (Echinodermata: Ophiuroidea) comensales de la esponja *Axinella* sp. en la Bahía de Zihuatanejo, Guerrero.  
Solís Marín, F.A. Presencia de *Molpadia intermedia* (Echinodermata: Holothuroidea) en las costas de México.

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- Beardsley, A.M., J.M. Colacino, R. Cashon, C.J. Bonaventura. The hemoglobins of the brittle star, *Hemipholis elongata* (Say) (Ophiuroidea: Echinodermata). Biochemical and ligand binding properties. 43A
- Birenheide, R., S. Amemiya, T. Motokawa. Morphology and mechanics of the arm ligament in a stalked crinoid *Metacrinus rotundus*. 115A
- Bishop, C.D., S.A. Watts. Osmolarity and ion concentrations in the fluid compartments of *Lytechinus variegatus* in varying salinities. 48A
- Bryan, P.J., D. Rittschof, J.B. McClintock. Antifoulants from echinoderms. 127A
- Carroll, A.K., J.M. Shick. Dietary accumulation of the uv-absorbing compounds in the ovaries of the green sea urchin. 62A
- Eernisse, D.J., R.A. Strathmann. What molecular phylogenies tell us about the evolution of larval forms. 136A (echinoderms)
- Ellers, O. A mechanical, developmental morphospace classifies shapes of camarodont echinoids. 71A
- Emlet, R.B. Functional requirements and structural patterns in the evolution of nonfeeding larval forms among echinoderms. 137A
- Herrera, J.C. Body form and skeletal growth in larvae of the sea urchin *Lytechinus variegatus* in response to differences in diet. 118A
- Hines, G.A., J.B. McClintock, S.A. Watts. Water-soluble compounds (pheromones?) are produced by echinoderms. 70A
- Hines, G.A., S.A. Watts. Potential endocrine capability of echinoderm coelomocytes. 9A
- Hoegh-Guldberg, O., J.S. Pearse. Food availability, temperature and the development of marine invertebrate larvae. 101A
- Jonsen, S. Polarization sensitivity in *Ophiidermata brevispinum*. 69A
- Kier, W.M., R.S. McCurley. The functional morphology of starfish tube feet: the role of a crossed fiber array in movement. 115A
- Klinger, T.S., J.B. McClintock, S.A. Watts. Chymotrypsin and  $\alpha$ - and  $\beta$ -glucosidase activity of digestive tissues of echinoderms of Antarctica and the Gulf of Mexico. 50A
- Lares, M.T., J.M. Lawrence. The effects of feeding periodicity of *Echinometra lucunter* (Echinodermata: Echinoidea). 51A
- Levin, P.S., M.E. Hay. Fish-urchin-seaweed interactions on rocky reefs in North Carolina. 20A
- Medeiros-Bergen, D.E. Loss of larvae to alongshore transport: an

- important source of inter-annual recruitment variation?  
(Cucumaria) 109A
- Pearse, J.S. Five rays or six: does it make any difference in potential fecundity of sea stars? 72A
- Pearse, V.B., J.S. Pearse. How are the living classes of echinoderms related and where do concentricycloids fit in? 71A
- Sewell, M.A. Mortality of pentaculæ during intraovarian brooding in the sea cucumber *Leptosynapta clarki*. 110A
- Shick, J.M., W.C. Dunlap, R.M. Larsen. Coral reef holothuroids (Echinodermata) accumulate uv-photoprotectants from their diets. 62A
- Stickler Jr., W.B., D.W. Foltz. Distribution of species in the *Leptasterias hexactis* complex from the west coast of the continental United States. 47A
- Strathmann, R.R. Peculiar constraints on life histories imposed by protective or nutritive devices for embryos. 101A
- Stricker, S.A. Calcium transients during starfish oocyte maturation. 72A
- Swezey, R., B. Rees. Are calcium-mediated redox changes involved in sea urchin egg activation at fertilization? 100A
- Szulgit, G., J. Trotter, T. Koob. Glycosaminoglycans in the ligaments of the pencil urchin *Eucidaris tribuloides*. 35A
- Vidal, A.M., C. Sierra, D.S. Smith, J. del Castillo. Contractile properties of the articular capsular capsule or ligament, in the primary spines of the sea urchin *Eucidaris tribuloides*. 35A
- Watts, S.A., G.A. Hines, J.B. McClintock, K.R. Marion, T.S. Hopkins. 5 $\alpha$ -reductase activity during androgen synthesis in echinoderm tissues. 122A

64TH ANNUAL MEETING OF THE ZOOLOGICAL SOCIETY OF JAPAN, OKINAWA, 20-23 November 1993. Abstracts in Zoological Science Vol. 10, Supplement. 1993.

- Asami, K., Y. Miyashita, N. Sawada. Arrest of development of sea urchin embryos by histone deacetylase inhibitors. p. 32.
- Birenheide, R., T. Motokawa, S. Amemiya. Arm and stalk movements of the crinoid *Metacrinus rotundus*. p. 171.
- Birenheide, R., T. Motokawa, S. Amemiya. Functional morphology of an elastic ligament in the arm of the stalked crinoid *Metacrinus rotundus*. p. 171.
- Chiba, K., H. Abe, S. Tanuma, M. Hoshi. Involvement of protein poly(ADP-ribosyl)ation during meiosis reinitiation in starfish oocytes. p. 64.
- Furuya, S., Y. Kamata, M. Okuyama, I. Yasumasu. [ADP-ribosyl]ation of histones in nuclei isolated from sea urchin embryos. p. 32.
- Hamaguchi, Y. Effects of DNA breakage on cleavage division of sea urchin eggs. p. 29.
- Horiguchi, T., K. Ohsumi, T. Kishimoto. Possible involvement of histone H1 in the regulation of DNA replication rate. p. 28.
- Iuchi, Y., K. Yamada, K. Akasaka, H. Shimada. An element in first intron is needed for increased expression of the arylsulfatase



- (Ars) gene of sea urchin (*H. pulcherrimus*) embryo. p. 33.
- Iwakoshi, E., T. Takahashi, Y. Muneoka, T. Ikeda, H. Minakata, K. Nomoto. Bioactive peptides in the sea cucumber *Stichopus japonicus* -- a preliminary report. p. 89.
- Jujiwara, A., I. Yasumasu. Inhibition of fertilization envelope hardening and hyaline layer formation by SCN- and ClO<sub>4</sub> in sea urchin eggs. p. 73.
- Kajihara, K., H. Fujisawa, S. Amemiya. Scanning electron microscopical studies on the larval development of a sand dollar, *Peronella japonica*. p. 59.
- Kamata, Y., T. Tojo, A. Fujiwara, S. Furuya, I. Yasumasu. Participation of ADP-ribosylated protein in Ca<sup>2+</sup>-induced exocytosis of cortical granule in sea urchin eggs. p. 72.
- Kanda, M., A. Fujiwara, K. Mitunaga-Nakasubo, I. Yasumasu. Analysis of proto-oncogene expression during early development in embryos of sea urchin. p. 31.
- Kawamoto, M., Y. Yasumasu. Partial purification & characterization of a casein-kinase 2-type protein kinase from sea urchin. p. 34.
- Kawashita, H., K. Yamazaki, T. Okamura, M. Asami, K. Mitsunaga-Nakatsubo, I. Yasumasu. Sequence analysis of cation transport ATPases in embryos of sea urchin *Hemicentrotus pulcherrimus*. p. 9.
- Kettoku, M., M. Sato, M. Kanda, K. Mitsunaga-Nakasubo, A. Fujiwara, I. Yasumasu. Okadaic acid inhibits nucleus protein binding to 5' upstream of early embryonic histone H3 gene in sea urchin morulae. p. 32.
- Kinoshita, T. Inductive interaction in germ layer formation of sea urchin embryos. p. 59.
- Kitai, N., H. Kobayashi, T. Fukada, Y. Myotoishi, S. Ikegami. Hatching enzyme-susceptible component of the fertilization membrane of the egg of the *Hemicentrotus pulcherrimus*. p. 34.
- Kojima, M.K., M. Asai, S. Nakamura. Effects of blastocoelic substances of gastrulae cultured in SO<sub>4</sub> 2- free sea water on spicule formation in isolated micromere descendant cells of sea urchin embryos. p. 37.
- Komatsu, M., M. Kawai, Y.D. Noda, M. Dan-Sohkawa, C. Oguro. Correlation of the left coelomic vesicle in bipinnaria, with a consideration to the relation to developmental type of asteroids. p. 175.
- Komatsu, M., H. Tominaga, C. Oguro. Development of the sea-star, *Henricia pachyderma*. p. 175.
- Komatsu, M., M. Sugiyama, Y.T. Kano. Larval development and metamorphosis of the sea star, *Astropecten polyacanthus* Müller and Troschel. p. 176.
- Komatsu, M., M. Kawai, C. Oguro. The development of the seastar, *Asterias amurensis* Lutken, with a consideration to the systematic relation to *A. amurensis versicolor* Sladen. p. 176.
- Komatsu, M., K. Tanka, C. Oguro, P.M. O'Loughlin. A preliminary report on the reproduction and development of the gastric brooding seastar, *Smilasterias multipara* O'Loughlin & O'Hara. p. 176.
- Kominami, T. Establishment of the bilateral asymmetry in starfish larvae. p. 58.
- Kuno, S., T. Nagura, I. Yasumasu. Insuline-binding capacity of micromere-derived cells of sea urchin embryos. p. 36.

- Kuroda, R., M. Fukuda, H. Kuroda, S. Nakade, K. Mikoshiba. Biochemical and immunological characterization of inositol trisphosphate receptor from sea urchin eggs. p. 72.
- Matsumoto, Y., T. Kasahara, S. Ikegami. A protein kinase from starfish oocytes having affinity with double-stranded RNA. p. 64.
- Matsushita, S. Fate mapping study of the endoderm of the 1.5 day-old chick embryo. p. 50.
- Minokawa, T., K. Kajihara, H. Fujisawa, S. Amemiya. Twin larvae of the sand dollar, *Astriclypeus manni*. Their potency to develop the echinus rudiment. p. 59.
- Mishima, M., I. Mabuchi. Phosphorylation of myosin light chain in fertilized sea urchin eggs. p. 21.
- Mita, M., A. Oguchi, S. Kikuyama, I. Yasumasu, R. De Santis, M. Kakamura. Endogenous substrates of the sea urchins *Arbacia lixula* and *Paracentrotus lividus*. p. 70.
- Miyazaki, A., E. Kamitsubo, S. Nemoto. Cytoskeletons responsible for the localization of germinal vesicles in the animal pole region of starfish oocytes: a centrifuge microscopic study. p. 31.
- Mogami, Y., J. Ishii, S.A. Baba. Gravitaxis of sea urchin larvae: changes in mechanical properties during development. p. 97.
- Nakagawa, T., A. Jujiwara, I. Yasumasu. Non-dialyzable compounds extracted from sea urchin embryos with chaotrophic ions produce abnormal embryos. p. 36.
- Nakasone, M., M. Kettoku, I. Yasumasu. Regulation of early embryonic histone gene expression in sea urchin by DNA methylation. p. 32.
- Nishigaki, T., K. Chiba, W. Miki, M. Hoshi. Purification and sequencing of sperm activating peptides in the jelly coat of starfish, *Asterias amurensis*. p. 70.
- Nishimura, A., K. Hijikata, K. Yamada, K. Takata, K. Akasaka, H. Shimada. Gene-transfer into sea urchin embryos with particle gun. p. 33.
- Noguchi, T., R. Matsuda, I. Mabuchi. The effects of tyrosine kinase inhibitors on early development of sea urchin embryos. p. 34.
- Nomura, A. PCNA during the first cell cycle in the fertilized eggs of starfish, *Asterina pectinifera*. p. 29.
- Nomura, A., S. Nemoto. Timing of DNA replication periods in starfish (*Asterina pectinifera*) eggs activated by the calcium ionophore. p. 29.
- Nomura, K., N. Suzuki. Structure of sea urchin hatching enzyme and the mechanism of fertilization envelope dissolution. p. 34.
- Ohta, K., Nakazawa, T. Cloning and sequencing of cyclophilin cDNA in sea urchin, *Hemicentrotus pulcherrimus*. p. 9.
- Satoh, S.K., Y. Hamaguchi. Effects of camptothecin on cleavage division of sea urchin eggs. p. 30.
- Seki, T., K. Seki. Observation of phagocytosis of echinoderm phagocyte on bacterial thin-layer in vitro. p. 84.
- Shimizu, T., S. Horiike, S. Ikegami. New histone molecules produced at the blastula stage of starfish embryos. p. 31.
- Shingyoji, C., K. Yoshimura, D. Eshel, I.R. Gibbons, K. Takahashi. Effect of outer dynein arm extraction and recombination on the velocity of microtubule sliding in reactivated sea urchin sperm flagella under imposed head vibration. p. 98.



- Saotome, K. Karyotypic comparison of the sea urchin, *Pseudocentrotus depressus* with 3 species of echinoids belonging to the family Strongylocentrotidae. p. 175.
- Tachibana, K., T. Okano, T. Sekiai, K. Ookata, T. Kishimoto. Cell cycle dynamics of cyclins A and B during meiotic and early cleavage cycles in starfish. p. 28.
- Taguchi, K., S. Nakamura, M.K. Kojima. Effects of seeral mitotic inhibitors on cleavage of urethane-treated eggs of sea urchin. p. 31
- Takagi Sawada, M., K. Izumi. High-molecular weight proteases in the ovary of starfish. p. 44.
- Takahashi, K., T. Mito. Bidirectional transport in sea urchin madreporite. p. 99.
- Tanaka, S., K. Yamada, K. Akasaka, H. Shimada. Purification of G-string binding proteins that interact with transcriptional regulatory element of sea urchin arylsulfatase (Ars) gene. p. 33.
- Teramura, W., T. Shimizu, S. Ikegami, H. Kaneko, M. Dan-Sohkawa. Ontogeny and characterization of extra-cellular matrix antigens in starfish antigens. p. 37.
- Tobita, T., T. Ishimoda-Takagi. Changes in sea urchin egg tropomyosin during fertilization and development. p. 43.
- Tojo, T., Y. Kamata, A. Fujiwara, I. Yasumasu.  $Ca^{2+}$  signaling is not necessary for fertilization membrane formation by melittin in sea urchin eggs. p. 73.
- Tosuji, H., I. Mabuchi. Increase in histone H1 kinase activity and condensation of chromosomes in unfertilized sea urchin eggs induced by calyculin A in an MPF-independent manner. p. 21.
- Wada, Y., Y. Mogami, S.A. Baba. A new type of motile response of cilia of echinopluteus. p. 98.
- Wada, H., N. Satoh. Phylogenetic analysis of deuterostomes. On the evolutionary history from invertebrates to vertebrates. p. 179.
- Yamada, K., K. Akasaka, H. Shimada. In vitro transcription of sea urchin (*Hemicentrotus pulcherrimus*) arylsulfatase gene. p. 33.
- Yamaguchi, M. Fractionation of macromeres, mesomeres & micromeres of the 16 cell-stage sea urchin embryos by centrifugal elutriation. p. 36.
- Yamazaki, K., H. Kawashita, C. Okamura, M. Asami, I. Mitsunaga-Nakatsubo, I. Yasumasu. Identification of  $Na^{+}/K^{+}$ -ATPase alpha-subunit isoforms of sea urchin *Hemicentrotus pulcherrimus*. p. 9.
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### **Ph.D. Dissertation**

Eliseikina, M.G. Morphofunctional states and physiological regeneration of digestive tract lining epithelium in *Cucumaria japonica*.

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### **Master's Thesis**

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#### HOW I BEGAN TO STUDY ECHINODERMS ... Part 4.

Feldman, Abby L. (University College, Galway). Studying Zoology as an undergrad in Trinity College Dublin, I became fascinated with echinoderms and cnidarians during a course of lectures given by Frank Jeal. When it came time to choose a supervisor for my final year project I grabbed him before anyone else did! He suggested I work with brittlestars. During my course of study I met up with Elizabeth Sides who had worked with *Ophiothrix fragilis* in Jamaica for 15 years. My association with both of these echinoderm people only served to install the feeling in me. The final straw, so to speak, occurred when my father convinced me to learn how to dive. Being terrified of the water this was no easy feat for me, but on my very first open water dive in Dalkey Sound, east coast of Ireland, the first thing I saw was a bed of brittlestars! I became so excited that I forgot to be afraid and since then, I have decided that there is nothing more interesting than an echinoderm. Or an Echinoderm scientist!!

Messing, Charles G. (NOVA University). I became fascinated with the great diversity of marine invertebrates sometime during college (having finally been convinced by parents and teachers that I could not make a living from dinosaurs--if they only knew about Jurassic Park), but had no real understanding of systematic research or on which group to concentrate. At the University of Miami's Institute of Marine Science (now RSMAS) in 1970 for graduate school, I gravitated to the invertebrate museum and came under Frederick M. Bayer's tutelage. I recall being made aware that the large R/V Gerda and Pillsbury crinoid collection needed working up. Bayer gave me several volumes of A.H. Clark's crinoid monograph and also used crinoid specimens in teaching me how to use a camera lucida. However, Gilbert Voss, then department chair, recommended that I work on the development and taxonomy of a large neotanaid crustacean from the Puerto Rico Trench for my master's thesis. I pursued this subject for about a year, finally discovering that someone had recently monographed the entire family; my own work had to await its publication, which kept getting put off. Seeking an alternative, I expanded a project on crinoid taxonomy for Bayer and Voss's Systematics of Invertebrates course into a thesis on comatulid crinoids of the Straits of Florida.

Zavodnik, Dušan (Center for Marine Research, Rudjer Bošković Institute, Rovinj, Croatia). Although born in a "continent" town, from childhood I felt an affinity to the sea and marine

creatures. But in the post-second-world-war times of poverty, I have had few opportunities to visit the Adriatic Sea. Luckily, due to kind gifts from some of my 'sea acquaintances', my collection of land flora exiccata, minerals, and land and fresh water mollusc shells became enriched by marine animals. At the age of fifteen, I held an open exhibition of my collections for the city community: about 150 specimens of marine molluscs and also, some corals, dried sea stars and sea urchins. By the end of my college studentship, because I lacked the money to cover train expenses, I undertook a cycle journey about 600 kilometers to visit and practice at the Institute of Oceanography and Fisheries at Split. There the assistant Mr. J. Hoenigman introduced me to zooplankton research which was also my occupation during the initial years of my University education. My scientific interest turned mostly to pelagic Copepod Crustaceans, and as well I have much enjoyed the skin and "hand-pump" diving. Thus it happened that I collected a beautiful female parasitic copepod Cancerilla tubulata with ovisacs attached on the oral side of a disk of a tiny brittle-star concealed in an algal thalus. I succeeded in identifying the creature as Amphipholis squamata. This event turned my major interest to echinoderms, to their taxonomy, ecology and distribution in the Adriatic Sea. In 1960, after my military service was over, I was engaged as an assistant at the Marine Biological Station at Rovinj, which continues to be my employer institution. But alas, in our small state, and in a small institute, it very soon became evident that an exclusive engagement in echinoderm studies is a mere illusion. The funds were available for other tasks and therefore I have had to do research in physiology of sardines, in morphology and ecology of small pelagic fish, in zooplankton, benthic communities studies, shellfish culture, pollution studies and even hydrography of the north Adriatic Sea. In the bulk of the "indispensable" i.e. first ranked tasks, echinoderms could be treated only as a hobby task - and regrettably, they remained to me a hobby until now. But it is true that continuous studies of shallow water benthic communities, especially by SCUBA diving always were excellent opportunities to collect immense quantities of by-the-way data on echinoderm diversity and their behavior and distribution patterns.



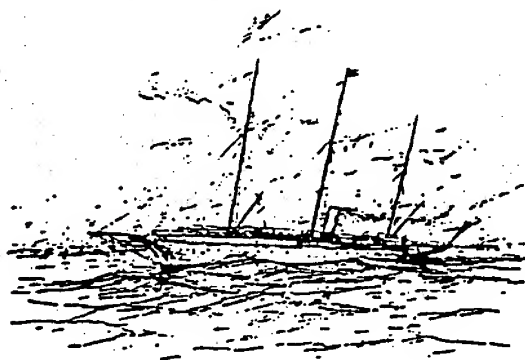
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ALBERT I<sup>er</sup>  
Prince de Monaco

# SOUVERAINS OCEANOGRAPHES

PRÉFACE DE S.A.S. LE PRINCE RAINIER III DE MONACO



*Documents réunis et commentés par*  
JACQUELINE CARPINE-LANCRE et LUIZ VIEIRA CALDAS SALDANHA

Fondation Calouste Gulbenkian  
Lisbonne  
1992

# Souverains océanographes

documents edited by

**Jacqueline CARPINE-LANCRE et Luiz Vieira Caldas SALDANHA**

A 179 page oblong volume (size 24 x 30 cm). Numerous illustrations: portraits, reproductions of letters, photographs, sketches and watercolours by D. J. Carlos. Short biographies of the persons mentioned; name index, subject index.

Prince Albert I of Monaco (1848-1922) and the King of Portugal D. Carlos I (1863-1908) were enthusiastic oceanographic pioneers. Thorough searches were undertaken in the Archives of Monaco (*Prince's Palace*, Oceanographic Museum), of Portugal (*Arquivo Nacional da Torre do Tombo*, Museum), of D. Carlos I / *Aquidrio Vasco da Gama*) and in Paris (*Archives de la Maison de France*, *branche d'Orléans*). They resulted in finding numerous documents written by both Sovereigns and their main assistants: Doctor Jules Richard, Albert Girard, Colonel Chaves. Ninety letters, most of them hitherto unpublished, were selected, transcribed and annotated in detail.

The correspondence between D. Carlos and Prince Albert, exchanged in French between 1894 and 1907, is mainly dedicated to scientific subjects: oceanographic cruises on board the yachts *Princess-Alice* and *Amelia*; scientific projects, ideas, and techniques; improvements in the use of gears and methods; study of the specimens and data; unremitting efforts to set up and promote meteorological observatories in the Azores. Other topics (politics, diplomacy, music) are sometimes mentioned and add a human touch to the book.

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May we draw your attention to the volumes of the series Résultats des campagnes scientifiques accomplies sur son yacht par Albert I<sup>er</sup>, Prince Souverain de Monaco. The ones offered to you correspond to the initial printing of 500 copies only. Printing was done on laid paper specially made with the watermark of the monogram of the Prince and the princely coat of arms. Colour plates were lithographed by the best printers of that time.

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1.- Avant-propos, par Y. Le Grand : 293-296.

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#### Volume 37

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1.- Introduction, par J. Forest : p. 3.

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3.- Aperçu sur les peuplements littoraux, par C. Carpine : p. 75-90.

4.- Foraminifères, par M. Mangin : p. 91-114.

5.- Spongiaires, par Cl. Lévi : p. 115-142.

6.- Annélides polychètes, par P. Fauvel et F. Rullier : p. 143-206.

7.- Sipunculoidea and Echiuroidea, by E. Wesenberg-Lund : p. 207-218.

8.- Chaetognathes, par M.L. Furnestin : p. 219-234.

9.- Pycnogonides, par L. Fage : p. 235-240.

10.- Mollusques pélagiques, par A. Franc : p. 241-244.

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1.- Recherches sur les vases du golfe de Gènes, par J.J. Blanc : 273-288

2.- Échinodermes, par E. Torionese : 289-294.

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Biologie de *Nyctiphanes couchii* (Crustacea, Euphausiacea) dans le secteur Nord du golfe de Gascogne, par Ph. Gros et J.Cl. Cochard : p. 25-46.

Astérides et Ophiurides littorales de la région d'Amboine (Indonésie), par A. Guille et M. Jangoux : p. 47-73.

Un système d'ouverture-fermeture pour filets à plancton trainés horizontalement ou obliquement et disposés en série, par A. Bourdillon, C. Castelbon et C. Macquart-Moulin : p. 75-84. 40 F

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Répartition des populations de Foraminifères benthiques dans le golfe Normand-breton et la baie de Seine, par M. Rosset-Moulinier : p. 107-126.  
Comportement alimentaire et structures digestives d'*Ophioderma longicauda* (Retzius) (Echinodermata, Ophiuroidea), par M. Deschuyteneer et M. Jangoux : p. 127-138.  
Polyclinidae (Ascidacea) du Sud-Ouest de l'océan Indien, par F. Monniot et F. Gaill : p. 139-162.  
Quelques Didemnidae et Polycitoridae (Ascidacea) de Kerguelen, par F. Monniot : p. 163-170.  
Ascidies phlébobranches et stolidobranches du Sud de l'Océan Indien, par Cl. Monniot : p. 171-224. 50 F

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Sea-urchin larvae as a tool for assessment of the quality of sea waters, by P. Bougis, M.C. Corre and M. Etienne : p. 21-26.  
Sur le genre *Sulculeolaria* par Blainville, 1834. Siphonophora, Calycophorae, Diphyidae, par C. Carré : p. 27-48.  
Biologie de *Processa noveli holthuisi*, Aladhub et Williamson (Crustacea Décapoda) dans le secteur nord du Golfe de Gascogne, par P. Gros : p. 49-70.  
Contribution à l'étude de la cryptofaune des paliers coralliens de la région de Tuléar (Madagascar), par M. Peyrot-Clausade : p. 71-94.  
Ascidians of the Venice Lagoon. I. Annotated inventory of species, by R. Brunetti : p. 95-109. 50 F

#### Volume 58

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Connaissance de la mangrove de Guadeloupe : constitution chimique des eaux d'imprégnation de la mangrove du grand-Cul-de-Sac Marin. J. Martinet, P. Bourgeois et H. Pascaline : p. 159-176.  
Influence de la température d'élevage sur les taux d'ingestion, de croissance et d'efficacité de la croissance brute chez le cilié oligouriche pélagique *Lohmanniella spiralis* Leeg., nourri sur la matière particulaire naturelle, par F. Rassoulzadegan : p. 177-184.  
La chlorophylle *a* dans un sédiment estuarien de Bretagne nord, par C. Riaux : p. 185-203. 50 F

#### Volume 59

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Cycle vital et croissance de l'appendiculaire *Oikopleura longicauda* (Vogt), 1854, par R. Fenaux et G. Gorsky : p. 107-116.  
Description d'un traineau destiné à l'échantillonnage quantitatif étagé de la faune suprabenthique néritique, par J.C. Sorbe : p. 117-126.  
Contribution à l'étude de la biologie reproductive d'une population naturelle de l'Annélide Polychète *Sabellaria alveolata* (Linné), par Y. Gruet et P. Lassus : p. 127-140.  
La croissance d'*Asterias rubens*. I. (Echinodermata Asteroidea) en baie de Douarnenez (Finistère), par M. Guillou : p. 141-154.  
Normalisation des symboles pour la représentation et la cartographie des biocénoses benthiques

littorales de Méditerranée, par A. Meinesz, C.F. Boudouresque, C. Falconetti, J.M. Astier, D. Bay, J.J. Blanc, M. Bourcier, F. Cinelli, S. Cirik, G. Cristiani, L. Di Geronimo, G. Giaccone, J.G. Harmelin, L. Laubier, A.Z. Lovric, R. Molinier, J. Soyer et C. Vamvakas : p. 155-172. 50 F

#### Volume 61

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 Cartographie des peuplements benthiques marins de Corse : I. La formation récifale à *Posidonia oceanica* de Saint-Florent, par C.F. Boudouresque, A. Meinesz et J.R. Lefevre : p. 27-38.  
 Étude préliminaire de l'épifaune des sédiments meubles de la rade de Brest (Finistère, France) à l'aide d'une caméra vidéo sous-marine, par A. Bourgoïn, M. Guillou et C. Morvan : p. 39-50.  
 Origine des sédiments ingérés et durée du transit digestif chez l'oursin spatangide *Echinocardium cordatum* (Pennant) (Echinodermata), par C. de Ridder et M. Jangoux : p. 51-58.  
 Recherches sur l'écologie des mollusques bivalves du plateau continental sud-gascogne, par M. Comet : p. 59-74.  
 Rôle de la température et de la salinité sur la mue, la métamorphose et la croissance à chaque stade larvaire de *Palaemon serratus* (Pennant) (Palaemonidae, Decapoda, Crustacea), par H. Yagi et J. Ceccaldi : p. 75-93. 50 F

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 Structure des peuplements méiobenthiques dans le secteur pollué par le rejet en mer de l'égout de Marseille, par M. Keller : p. 13-36.  
 La maladie de l'«oursin chauve» : ultrastructure des lésions et caractérisation de leur pigmentation, par Ph. Maes, M. Jangoux et L. Fenaux : p. 37-45.  
 Les Bryozoaires littoraux de la ria de Ribadeo, par E.F. Fernandez Pulpeiro : p. 47-68.  
 Identification and Systematics of the Tintinnina (Ciliophora) : Evaluation and Suggestions for Improvement, par M. Laval-Peuto and D.C. Brownlee : p. 69-84.  
 Eau rouge à *Noctiluca* sur la côte de Provence en juin 1984. Essai d'interprétation dynamique, par J.M. Pérès, P. Laborde, J.C. Romano et Y. de Souza-Lima : p. 85-116.  
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# **Fourth European Echinoderms Colloquium**

## **London**

**The Natural History Museum  
9th - 12th April, 1995**



First circular



# Fourth European Echinoderms Colloquium

9th - 12th April, 1995

This will be held in London, under the auspices of the Natural History Museum, jointly organized by Andrew B. Smith, the Natural History Museum, Roland Emson, King's College, London, and Andrew Campbell, Queen Marys College, London. It will be a four day meeting, without concurrent sessions, covering all aspects of echinoderm research, but including three thematic half-day sessions. To mark the retirement of Professor David Nichols and the contribution he has made to our knowledge of the echinoderms these will be on Reproductive biology, Structure and function, and Palaeobiology, topics in which he has had a particular interest.

A second circular calling for papers and including registration and booking forms will be sent out in April, 1994.

To receive the next circular please fill in and return the form below to:

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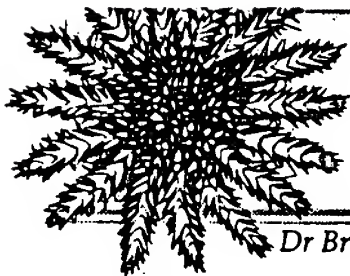
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# COTS COMMS

Dr Brian Lassig and Udo Engelhardt

We've reported on an apparent increase in the number of crown-of-thorns starfish on some reefs off Cairns and further north in the last two issues of COTS COMMS. The increase was based on reports from Reef users through the COTSWATCH Program (see next section). Recent analysis of the information collected through this scheme over the last few years and the results of 7 years of AIMS surveys (see Current COTS) shows that the increase in starfish numbers in parts of the northern GBR is real.

But before the panic button gets pushed, the newspaper headlines typeset and the COTS Program Coordinator besieged by bloodhounds, consider the densities of starfish being reported. During the peak of outbreaks on reefs off Townsville in the late 1980s, the AIMS manta tow surveys recorded averages of 200 to 300 COTS per reef, and around 4 starfish per 2-minute manta tow. The current average densities of starfish being reported on reefs off Cairns and further north are two orders of magnitude lower (i.e. 1/100th of outbreak densities). These are averages based on reefs within the particular Reef Sectors. On some individual reefs (e.g. Michaelmas Cay and Lizard Island) the COTS densities aren't too far from being called localised outbreaks.

We don't know whether or not the increase in starfish numbers represents the early stages of another major outbreak for the GBR. During the previous outbreak episodes there were no substantial monitoring programs in place that could have detected the increases currently being seen, so we don't know if outbreaks start with a bang or a gradual build up in starfish numbers. The only way we will get a clear picture of the dynamics of COTS on the Reef and the initiation of outbreaks is to maintain a close watch on the current situation.

## RELAUNCH OF THE COTS - REEF USER SURVEY SCHEME (COTSWATCH)

A new and improved public participation program aimed at getting more Reef users actively involved in reporting COTS sightings was launched in November 1993. The new program continues the evolution of survey schemes that were spawned in 1982. Largely in response to comments made by previous contributors, we decided to introduce some fairly major and hopefully beneficial changes. COTSWATCHERS of the world report!

The survey form used for reporting on starfish sightings has been redesigned, making it more user-

friendly and easier to complete. The number of questions on the form has also been reduced. An illustration of a mature crown-of-thorns starfish now assists Reef users in the positive identification of the species. There is also a warning in relation to the danger posed by the venomous spines of the starfish.

What hasn't changed is the emphasis on reporting 'zero-sightings' as well as actual sightings of starfish. Appropriate management action, i.e. giving permission to attempt local-scale controls, requires knowledge of both the past and present situations at any given reef. Also, our chances of detecting any real increase in the numbers of starfish over time rely very much on long-term records, including reports on both the presence and absence of COTS!

We have also attempted to address some other shortcomings of previous schemes - namely the insufficient feedback given to COTSWATCHERS. In the past, lack of time and resources often prevented us from maintaining an effective two-way flow of information between contributors to the scheme and ourselves. However, this is already changing. The new user survey scheme now provides added incentives to all contributors through a variety of new measures.

COTSWATCHERS will now:

- receive free information (i.e. brochures, booklets) on the latest research into the starfish phenomenon and on the Great Barrier Reef Marine Park in general;
- be acknowledged in *Reef Research* (starting with this issue; see below);
- be invited to attend regular slide presentations and updates on the current status of the starfish on the Reef. The aim is to conduct these presentations every six months in the major regional centres along the north Queensland coast.

Regular contributors to the scheme who provide information for extended periods of time may also receive additional tokens of our appreciation i.e. in the form of research publications, slides and maybe even a video tape (note that this doesn't mean that you'll score more brownie points by reporting more COTS!).

INFORMATION: The Editor,  
Reef Research GBRMPA

Reef Research March 1994

Page 13



# SAMS

THE SCOTTISH ASSOCIATION FOR MARINE SCIENCE

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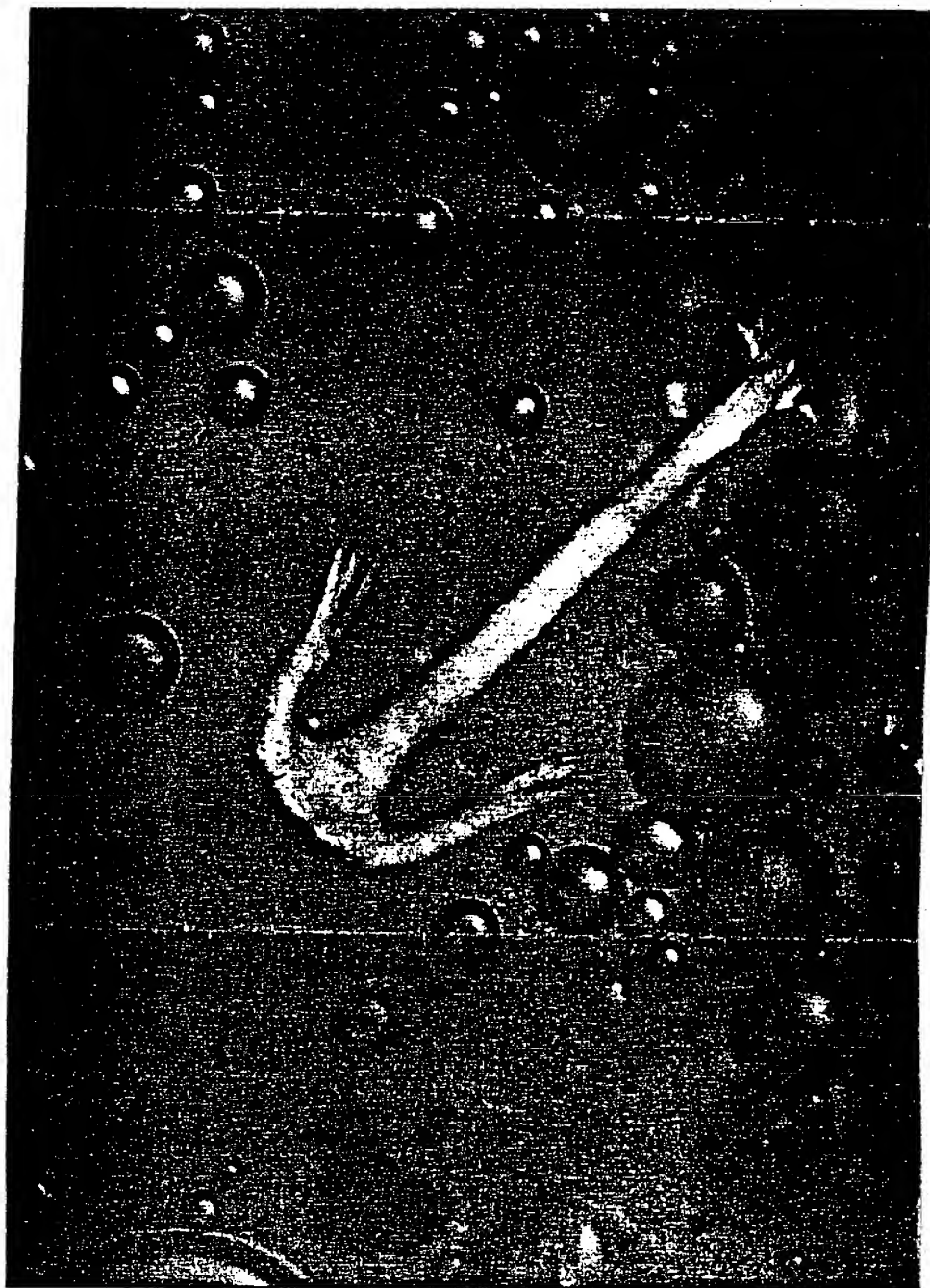
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**Newsletter 9**  
**March 1994**

Anchor ossicle from the sea cucumber *Labidoplax digitata*. The anchors are used in locomotion. Photograph. by Dr J. Douglas McKenzie. taken on a Zeiss Axioskop using Nomarski differential interference contrast.



## A B S T R A C T

The monograph represents a review on data, concerning structure, taxonomical distribution, biological activities and functions of unique group of natural products, namely triterpene glycosides of holothurians. Detailed information on biology and biochemistry of these animals is given to demonstrate the place of the triterpene glycosides among functional systems and subsystems of their producers - holothurians. Triterpene glycosides are used as a model for the analysis of evolution of complex adaptation. Structure-function relationship for these compounds are analyzed using so-called holistic or system-theoretical approach of Van-der-Claauw - Dullemeijer. Application of such morphological trends of evolution as aromorphosis, idioadaptations as well as the theories of organogenesis modes and phylembryogeneses to the studies on evolution of triterpene glycosides has been also shown. We suggest to call the approach, dealing with the application of comparative-morphological method to biochemical level as chemical morphology.

## CONTENTS

### PREFACE

### INTRODUCTION

#### 1. BIOLOGY OF SEA CUCUMBERS

##### 1.1. General characteristics

###### 1.1.1. Morphology

###### 1.1.2. Physiology

###### 1.1.3. General chemical composition

###### 1.1.4. Way of life

###### 1.1.5. Feeding

###### 1.1.6. Reproduction

###### 1.1.7. Distribution, role in communities

###### 1.1.8. Enemies.

###### 1.1.9. Economical significance

##### 1.2. Systematics

###### 1.2.1. Systematics: principles and directions

###### 1.2.2. Diagnostic characters of sea cucumbers

###### 1.2.3. System of class

##### 1.3. Phylogeny

###### 1.3.1. Phylogenetics: general consideration

###### 1.3.2. Phylogeny of type Echinodermata

###### 1.3.3. Phylogeny of Holothurioidea

#### 2. BIOCHEMISTRY OF SEA CUCUMBERS

##### 2.1. Some general information on composition of fractions and structures of primary and secondary metabolites of echinoderms.

##### 2.2. Primary metabolites including biopolymers and their precursors from sea cucumbers

##### 2.3. Secondary metabolites from sea cucumbers

#### 3. TAXONOMICAL DISTRIBUTION OF TRITERPENE GLYCOSIDES OF SEA CUCUMBERS

##### 3.1. Order Aspidochirotida

###### 3.1.1. Family Holothuriidae

###### 3.1.2. Family Stichopodidae

##### 3.2. Order Dendrochirotida

##### 3.3. Scratch chemically investigated groups of Holothurioidea

#### 4. TRITERPENE GLYCOSIDES AND SYSTEMATICS OF SEA CUCUMBERS

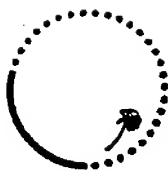
##### 4.1. General considerations

##### 4.2. Revision of taxonomic status of *Bohadschia graeffei*

- 4.3. On taxonomic status of North Atlantic sea cucumber *Holothuria forskali*
- 4.4. On taxonomic status of North Pacific stichopodids
- 4.5. Other groups
- 4.6. The structure of triterpene glycosides and phylogeny of Holothurioidea
- 4.7. General trends of triterpene glycosides of Holothurioidea evolution
  - 4.7.1. General considerations
  - 4.7.2. Gomological variability and trend in sea cucumbers triterpene glycosides evolution
  - 4.7.3. The correlation between chemical and morphological diversity .
5. BIOLOGICAL ACTIVITIES AND BIOLOGICAL FUNCTIONS OF SEA CUCUMBERS TRITERPENE GLYCOSIDES
  - 5.1. Biological activities of glycosides
    - 5.1.1. Toxic properties of glycosides
    - 5.1.2. Other types of biological activities
  - 5.2. Biological functions of glycosides
    - 5.2.1. Resistance ability of sea cucumbers cell membranes against action of their own triterpene glycosides
    - 5.2.2. Regulation of reproduction - the inner function of sea cucumber glycosides
    - 5.2.3. Internal function of sea cucumber triterpene glycosides
  - 5.3. Some conclusions
6. MORPHOLOGICAL CONCEPTIONS AND APPROACHES TO SEA CUCUMBER TRITERPENE GLYCOSIDES EVOLUTION AND THEIR STRUCTURE-FUNCTION RELATIONSHIPS
  - 6.1. General considerations
  - 6.2. Holistic or system-theoretical approach to description of sea cucumber glycosides structure-function relationships
  - 6.3. Morphological trends in sea cucumber triterpene glycosides evolution
    - 6.3.1. General considerations
    - 6.3.2. The conception of organogenesis modes
  - 6.4. Morphological trends in evolution of biosynthesis of sea cucumber glycosides
    - 6.4.1. Biosynthesis of sea cucumber triterpene glycosides
    - 6.4.2. The theory of phylembryogeneses
  - 6.5. General trends of sea cucumber triterpene glycosides phylogenesis
- CONCLUSIONS. CHEMICAL MORPHOLOGY - A NEW APPROACH TO THE INVESTIGATION OF STRUCTURE-FUNCTION RELATIONSHIPS OF BIOMOLECULES
- INDEX OF LATIN NAMES

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Kalinin V. I., Levin V. S., Stonik V. A. The chemical morphology: Triterpene glycosides of sea cucumbers (Holothurioidea, Echinodermata)/ Pacific Institute of Bioorganic Chemistry of the Far East Branch of the Russian Academy of Sciences; Kamchatka Department of the Pacific



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# BECHE-DE-MER

INFORMATION BULLETIN

Number 5 — August 1993

Editor: Chantal Conand, Université de la Réunion, Lab. de Biologie Marine, 97715 Saint-Denis Messag. Cedex 9, La Réunion  
Production: Jean-Paul Gaudechoux, Fisheries Information Officer, SPC, PO Box D5, Noumea, New Caledonia

## NOTE FROM THE EDITOR

Since the last issue, new members have joined our Special Interest Group. They are welcome and invited to send comments, information and articles to the next bulletins which will be published now, we hope, twice a year. Thanks to those who have contributed to this issue.

The first section of this issue contains useful information on our main areas of interest, i.e. markets and fisheries, the biology and ecology of sea-cucumbers, and management. Several articles present recent data on world markets, marketing and local fisheries in the tropical Pacific and the Indian Ocean. According to world market statistics, beche-de-mer imports have peaked in 1988, but recent figures are needed to interpret the 1989 decline.

Within the Pacific region, fishery statistics present contrasting trends. In Papua New Guinea, production appears stable. In Solomon Islands, production first increased in 1986 when it passed 100 t; in 1991 it peaked at 662 t. The mean value per kg has not changed much since 1988. In Fiji, production has declined since 1989, but the mean value per kg for exported products has doubled since that time. The decline is probably related to the population decline described by Tim Adams in his article.

Most of the recent progress made on the biology and ecology of holothurians is presented in the section on publications. The reply by Lyle Vail to the request for information on spawning provides some interesting data. If you have made similar observations, please provide them, and we will publish them in the next issue.

Chantal Conand

## Inside this issue

Marketing of beche-de-mer  
by William S. Sommerville Page 2

Recent evolution of Hong Kong and  
Singapore sea cucumber markets  
by Chantal Conand Page 4

Statistics on beche-de-mer produc-  
tion Page 9

Regional Sea Cucumber Meeting  
by Tim Adams Page 13

Management of beche-de-mer (sea  
cucumber) Fisheries  
by Tim Adams Page 15

Beche-de-mer correspondence  
Page 23

Beche-de-mer Abstracts, Publica-  
tions, Workshops and Meetings  
Page 25

List of beche-de-mer buyers  
Page 29

Welcome to new members  
Page 31



## NEW BOOK INFORMATION

### Genetics and Evolution of Aquatic Organisms

Edited by A Beaumont, School of Ocean Sciences,  
University College of North Wales, UK

Two thirds of the Earth is covered by water; aquatic organisms therefore play a vital role in the Earth's ecosystem. This single volume is based on the selected proceedings of an international conference held at the University of Wales, Bangor, UK on 10-16 September 1992. Review articles and research papers from a truly international list of contributors provide a unique combination of background information together with current directions of research in the evolution and genetics of organisms in aquatic habitats.

The wide range of topics discussed include genetic differentiation at population, species and higher taxonomic levels, heterosis and adaptation, genetics and evolution of asexually reproducing organisms, genetics and pollution, and genetics in aquaculture. Both traditional karyology and allozyme approaches are covered; however, there is a strong focus on the latest developments in DNA technology and their power to address problems in the field throughout the book.

The book is organized into themes, each introduced by keynote papers. Keynote authors include G R Carvalho (UK), E M Gosling (Ireland), H Hummel (Netherlands), A Meyer (USA) T Patamello (Italy) D O F Skibinski (UK) C Thiriot-Quievreux (France) and E Zouros (Greece and Canada). All papers in this volume have been tightly edited to provide a clear, coherent, state-of-the-art review.



#### Key Benefits

- \* brings a wide range of information together in one place
- \* information presented in a manner suitable for both students and researchers

*Contents:* Preface. Speciation and wide scale genetic differentiation. Gene flow and population structure. Heterozygosity, heterosis and adaptation. DNA technology and genetics of aquatic invertebrates. DNA technology and phylogeny of fish. Genetics of aquatic clonal organisms. Chromosomal genetics. Genetics and pollution. Genetics and aquaculture.

March 1994: 234x156: 560pp, 109 line illus, 40 halftone illus  
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JLM 03.94

## (Professor John) Swan Poem

Professor John Swan commemorated his retirement from chair of the Crown-of-Thorns Starfish Research Committee (COTSREC) by bequeathing the following literary legacy:

### The Age of Reason and *Acanthaster planci*

Under the December moon, more often under sun,  
Chance encounters during spawning, there are almost none.  
The female egg, as ever was the case,  
Attracts the male sperm to her embrace.  
And chemotaxis, as the name implies,  
Makes no distinction 'twixt the foolish and the wise.  
And what is more, the oft-observed communal aggregation,  
Ensures for all a most successful starfish propagation.

Gastrula! Bipinnaria! Brachiolaria!  
Fourteen days of buoyant freedom, sometimes twenty-eight,  
A pea-soup diet, *Dumaliella*, presently their fate.  
Then down they go! To bed with crustose algae and  
*Lithothamnium pseudosorum*.  
Now watch each starfish grow from its remarkable  
primordium.

Then come the fish, the crabs, the worms  
Their brothers, sisters, cousins,  
That finally reduce our *Acanthaster* population  
From the millions to the dozens.

A few more months and then, the promised land!  
Where milk and honey flow from coral strand.  
White scars appear on branching staghorn corals,  
And far away - the muted roar of academic quarrels.

"It's predator removal"; "Heavy rainfall after drought";  
"It's the farmers"; "It's El Nino"; "Larval transport without  
doubt".

It seems the reef is "under threat",  
And who to blame? - the Managers, I'll bet.

But Johnson points to H. McCallum's optimistic simulations:  
"The patterns of the starfish plagues in reef sub-populations,  
Are cyclical, or quite chaotic, numbers high or low,  
Depending on the larval pulses, water movement, ebb and  
flow."

The oceans are resilient, their systems are robust,  
Life forms adapt, evolve and flourish; corals will adjust.  
So shoot the foxes, feral cats, the pigs, the goats and rabbits,  
But learn to love the crown-of-thorns; accept its natural  
habits.

Source: Reef Research Vol. 3(1), March 1993



## Antarctica - Continuing Trend Toward More Science Personnel

Australia's 1992-93 Antarctic science season, the 46th of Australia's modern Antarctic program, got under way on 17 October with the departure from Hobart of *Aurora Australia*. This summer saw a total of 185 scientific personnel undertaking research in Antarctic and subantarctic regions, nearly three times the number of researchers in the mid-1980s.

Major research programs included:

- deep ice core drilling at Law Dome, inland from Casey, analysing cores to provide records of past climatic conditions;
- research into the interaction between ice and atmosphere to determine the role of sea ice in global climate change;
- investigations of the UV radiation climate over the Southern Ocean south of Australia and the response of phytoplankton to UV radiation exposure;
- upper atmospheric and geological studies; and
- two major inter-disciplinary marine science voyages.

Two marine science research cruises saw the most extensive use yet of *Aurora Australis* as a scientific research vessel. The first concentrated on krill and zooplankton distribution, with associated biological, oceanographic and geological studies, while an autumn ice-edge voyage examined the oceanographic structure of the water masses between Hobart and the Antarctic continental shelf. This second cruise was part of the World Oceanographic Circulation Experiment (WOCE), investigating ocean currents' current and potential role in driving climate.

Much of this season's effort went into improving Australia's already high standards of environmental management. It included continuing removal of rubbish from disused tips and completion of removal of the former Casey station.

The *Aurora Australia* was supported by the supply vessel *Icebird*, in its ninth season with the Australian Antarctic Program.

Source: ANARE News Spring/Summer 1992-93

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## ECHINODERMS OF THE ROVINJ AREA

Center for Marine Research, "Rudjer Bošković" Institute,  
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### CRINOIDEA

*Antedon mediterranea* (Lamarck, 1816)

### HOLOTHUROIDEA

*Holothuria tubulosa* Gmelin, 1788  
*Holothuria helleri* Marenzeller, 1878  
*Holothuria polii* Delle Chiaje, 1823  
*Holothuria impatiens* (Forsk., 1775)  
*Holothuria forskali* Delle Chiaje, 1823  
*Eostichopus regalis* Cuvier, 1817  
*Ocnus planci* (Brandt, 1835)  
*Stereoderma kirschbergi* (Heller, 1868)  
*Leptopentacta elongata* (Düben and Koren, 1844)  
*Leptopentacta tergestina* (M. Sars, 1857)  
*Thyone fusus mediterranea* Madsen, 1941  
*Thyone cherbonnieri* Reys, 1960  
*Havelockia inermis* (Heller, 1868)  
*Pseudothyone sculponea* Cherbonnier, 1958  
*Phyllophorus urna* Grube, 1840  
*Neocucumis marioni* (Marenzeller, 1878)  
*Leptosynapta inhaerens* (O.F. Müller, 1776)  
*Labidoplax digitata* (Montagu, 1815)

### ASTEROIDEA

*Astropecten aranciatus* (Linnaeus, 1758)  
*Astropecten irregularis pentacanthus* (Delle Chiaje, 1825)  
*Astropecten bispinosus* (Otto, 1823)  
*Astropecten platyacanthus* (Philippi, 1837)  
*Astropecten spinulosus* (Philippi, 1837)  
*Asterina gibbosa* (Pennant, 1777)  
*Asterina phylactica* Emson and Crump, 1979  
*Anseropoda placenta* (Pennant, 1777)  
*Echinaster sepositus* (Retzius, 1783)  
*Coscinasterias tenuispina* (Lamarck, 1816)  
*Marthasterias glacialis* (Linnaeus, 1758)



## OPHIUROIDEA

*Ophiomyxa pentagona* (Lamarck, 1816)  
*Amphiura chiajei* Forbes, 1843  
*Amphiura mediterranea* Lyman, 1882  
*Amphiura cherbonnieri* Guille, 1972  
*Amphiura filiiformis* (O.F. Müller, 1776)  
*Amphipholis squamata* (Delle Chiaje, 1828)  
*Ophiothrix fragilis* (Abildgaard, 1789)  
*Ophiothrix quinquemaculata* (Delle Chiaje, 1828)  
*Ophiopsila aranea* Forbes, 1843  
*Ophioderma longicaudum* (Retzius, 1805)  
*Ophioconis forbesi* (Heller, 1863)  
*Ophiura albida* Forbes, 1839  
*Ophiura grubei* Heller, 1863  
*Ophiura ophiura* (Linnaeus, 1758)

## ECHINOIDEA

*Arbacia lixula* (Linnaeus, 1758)  
*Sphaerechinus granularis* (Lamarck, 1816)  
*Echinus acutus* Lamarck, 1816  
*Echinus melo* Lamarck, 1816  
*Psammechinus microtuberculatus* (Blainville, 1825)  
*Paracentrotus lividus* (Lamarck, 1816)  
*Echinocyamus pusillus* (O.F. Müller, 1776)  
*Spatangus purpureus* (O.F. Müller, 1776)  
*Echinocardium cordatum* (Pennant, 1777)  
*Schizaster canaliferus* (Lamarck, 1816)  
*Brissopsis lyrifera* (Forbes, 1841)

contributed by D. Zavodnik

## Howard Barraclough Fell, 1917-1994

Dr. H. Barraclough ("Barry") Fell died of heart failure on 21 April 1994, in San Diego, California. This was a sudden end to an extraordinary career that touched on many branches of science, a career that illuminated the lives of legions of people around the world.

Barry was born in England on June 6, 1917, and resided in New Zealand from 1921 to 1938. After completing an M.Sc. degree at Victoria University College, Wellington, New Zealand in 1938, Barry traveled to the University of Edinburgh, Scotland for his Ph.D. research, which he completed in 1941. From 1941 to 1946 he served with the British Army, and he was demobilised in 1946 with the rank of Major. He returned to New Zealand and joined the faculty of Victoria University College, where he was Senior Lecturer in Zoology from 1946 to 1957 and Associate Professor of Zoology from 1957 to 1964. Edinburgh University awarded him a D.Sc. degree in 1955. In March, 1964, Barry took up an appointment as Curator of Invertebrate Zoology, later Professor of Invertebrate Zoology, at Harvard University's Museum of Comparative Zoology. At the M.C.Z. he was the last in a long line of distinguished students of the echinoderms (L. and A. Agassiz, Lyman, H.L. Clark, Deichmann...). He remained at Harvard until his retirement in 1979, when he and his wife Rene moved to San Diego, California.

He became a Fellow of the Royal Society of New Zealand in 1960, and he was awarded the Royal Society's Hector Research Medal (1959) and Hutton Memorial Medal (1962). He was a Fellow of the American Academy of Arts and Sciences (1964).

His career in science comprised approximately 3 phases. From 1940 to the early 1970's, he was one of the world's leading echinoderm specialists. From 1966 to the early 1970's he became involved in studying distribution patterns of fossil invertebrates. Then, an interest in epigraphy (ancient writings, usually on stone) gradually evolved from an avocation of many years' standing to a full-time late career which captured Barry's interest for the last 25 years of his life. Barry founded the Epigraphic Society in 1974; today, 20 years on, the Society is flourishing, with world-wide membership. His later work, on early history of the Polynesians, on early migrations of man to North America, and on epigraphy in general, resulted in prolific publications, including three very popular books. Here, again, Barry stimulated a fever of enquiry into this intriguing field of research.

Barry's research on the Echinodermata resulted in more than 100 publications, many of these being original works of great importance. Several of his papers, on embryology, on brittlestar classification, on evolution of major groups, have become classics that are constantly cited today. He vigorously sought answers to larger questions, and never hesitated to step into controversial issues, usually providing new and unique perspectives. There is no doubt that, during the period 1950-1970, Barry attracted more students to the study of echinoderms than any

of his contemporaries.

I feel greatly privileged to have been a long-time friend and colleague of Barry Fell's, and I am always grateful to have been a graduate student under him. He was a superb teacher and lecturer; as undergraduate students, we were always impressed by the clarity and precision of his lectures in advanced vertebrate zoology and invertebrate zoology, and at the graduate level, he dazzled us with his expositions on zoogeography and evolution. He guided his graduate students with care and compassion, and we were always delighted to be sounding boards for the avalanches of new ideas that he produced.

Barry was a polymath. He had a broad and deep knowledge of many aspects of science and the arts. He was an authority on astronomy and numismatics, and he was an extraordinary linguist, being thoroughly familiar with many languages, ancient and modern.

Barry is survived by his wife Rene, sons Roger and Julian, daughter Veronica, and three grandchildren.

David L. Pawson